



The Magazine for Information Executives

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A Tale of Two
Supply Chains

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Should CIOs Trust
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Is Your Industry Next?

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If You Lived Here You'd Be **Wired** By Now

A day in the life of a well-connected town PAGE 74

Tony McAlister, VP of Information Services, **buy.com**

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Dr. Harvey Stern's **finest hour** was seeing
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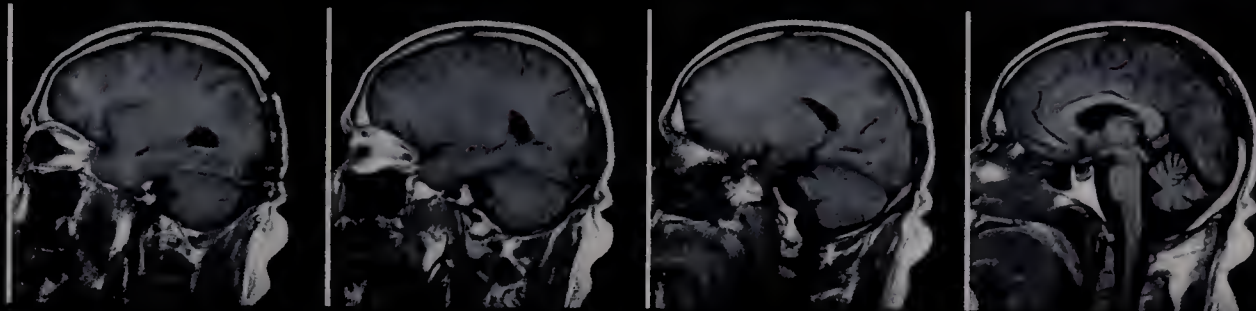
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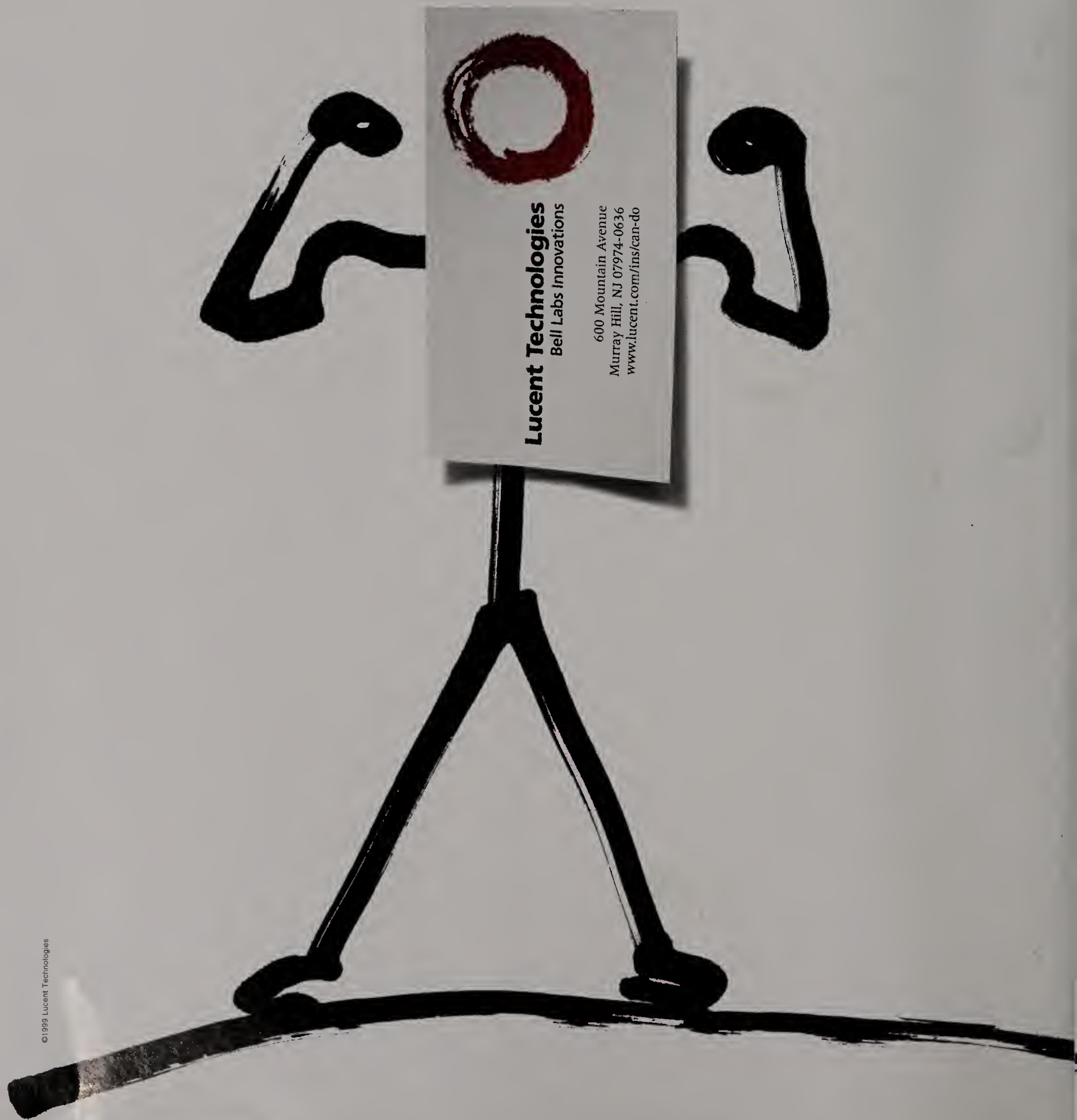
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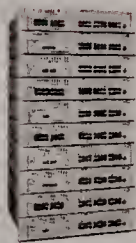


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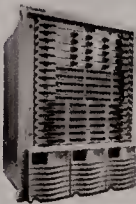
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BOOK EXCERPT: FUTURE WEALTH The internet changes everything about wealth, including the ways we measure it. Author Stan Davis explains why CIOs need to run at the speed of the connected economy.

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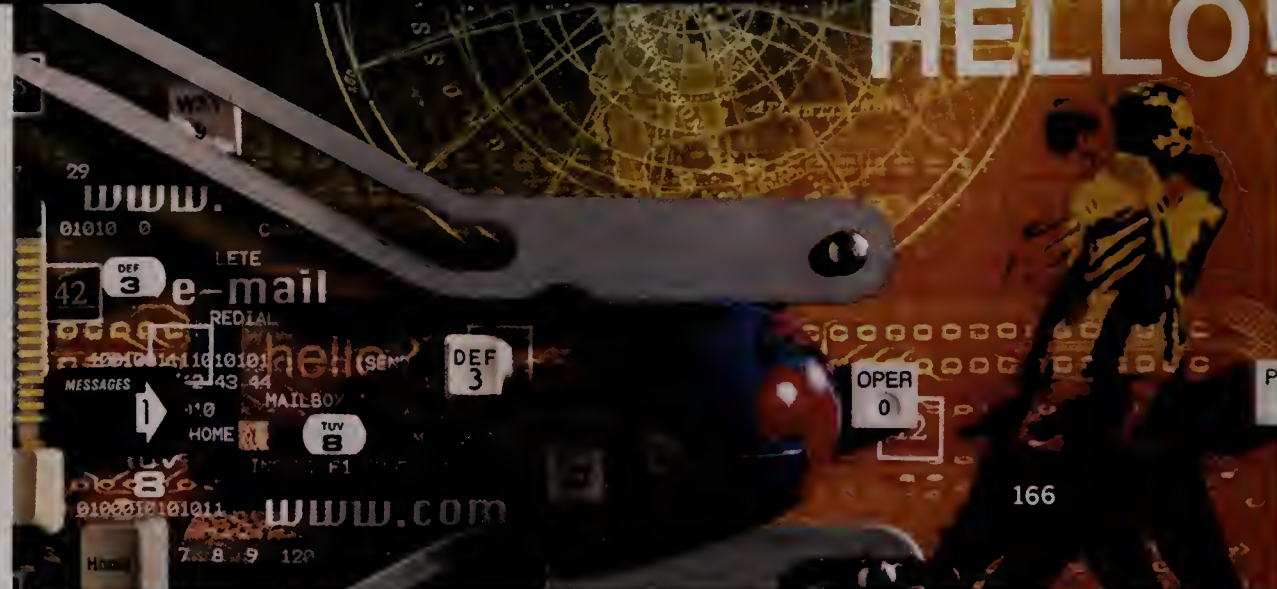
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“Why are accomplished managers exchanging cushy corporate suites for Spartan startup digs? Money.”

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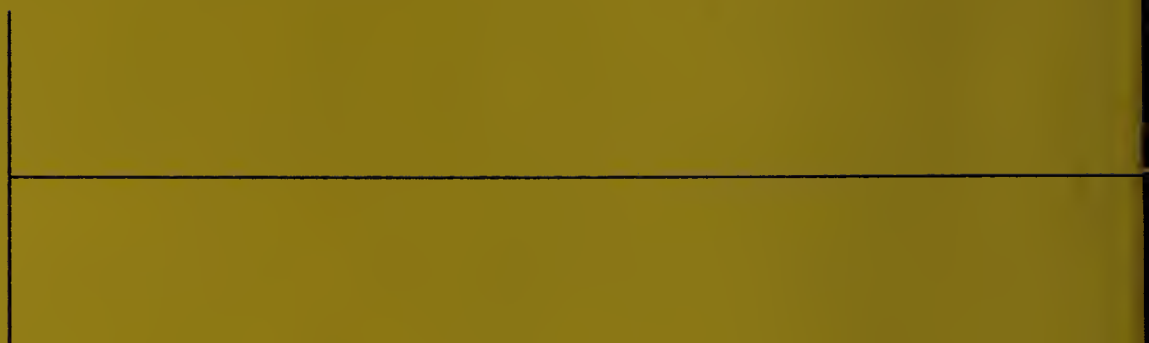
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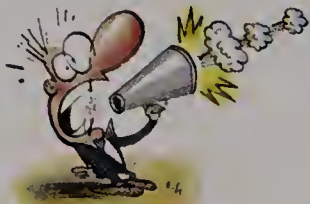
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From the Editor

lundberg@cio.com

Detroit's Three-Legged Race

A few months ago, Ford and GM were in a neck-and-neck race to launch the first, the biggest, the best online marketplace in the automotive industry. The story had all the makings of a great magazine article—drama, tension, reader relevance, high stakes, well-known players. With the ending still uncertain, it would have been the first of at least two installments. So we wrote it for the April 1 issue of *CIO*.

Well, we had no idea just how uncertain the ending really was. The reason you didn't see the story in that issue is because just a few short days before we were to ship the magazine off to the printer, Ford and GM decided to combine their two separate efforts into one monster marketplace, bringing in DaimlerChrysler as well. Goldman Sachs predicts the new company will have a potential market cap of between \$30 billion and \$40 billion, with annual revenues of about \$3 billion by 2003. The transaction figures will be staggering.

But is that amount of money and shared control of the marketplace enough to move these bitter rivals closer together? That and many other questions remain to be seen. If our profile of the original parallel efforts would have been the first of two installments, the current story, "The Biggest



Gamble Yet," by Lauren Gibbons Paul, beginning on Page 144, is but the introduction to what should prove to be a long, complicated and fascinating tale.

Part of the complexity is that both Ford and GM have existing contracts with two separate vendors to build the system. Not only will the automakers have to work together on this, so will competitors Commerce One (best known for its exchange technology) and Oracle (which has been aggressively trying to push into the exchange space, but whose real strength has been in handling the back-end, supply chain management piece of the action). And DaimlerChrysler, not to be back-seated in this deal, has reserved the right to bring in its own technology partner, SAP.

From the theoretical perspective, developing this marketplace makes big sense. But its success is by no means guaranteed. Whatever the outcome, CIOs should keep a close eye on how this develops. If you're in an industry that shares a significant supplier base, there will be an exchange coming to your industry soon.

Allie Lundberg

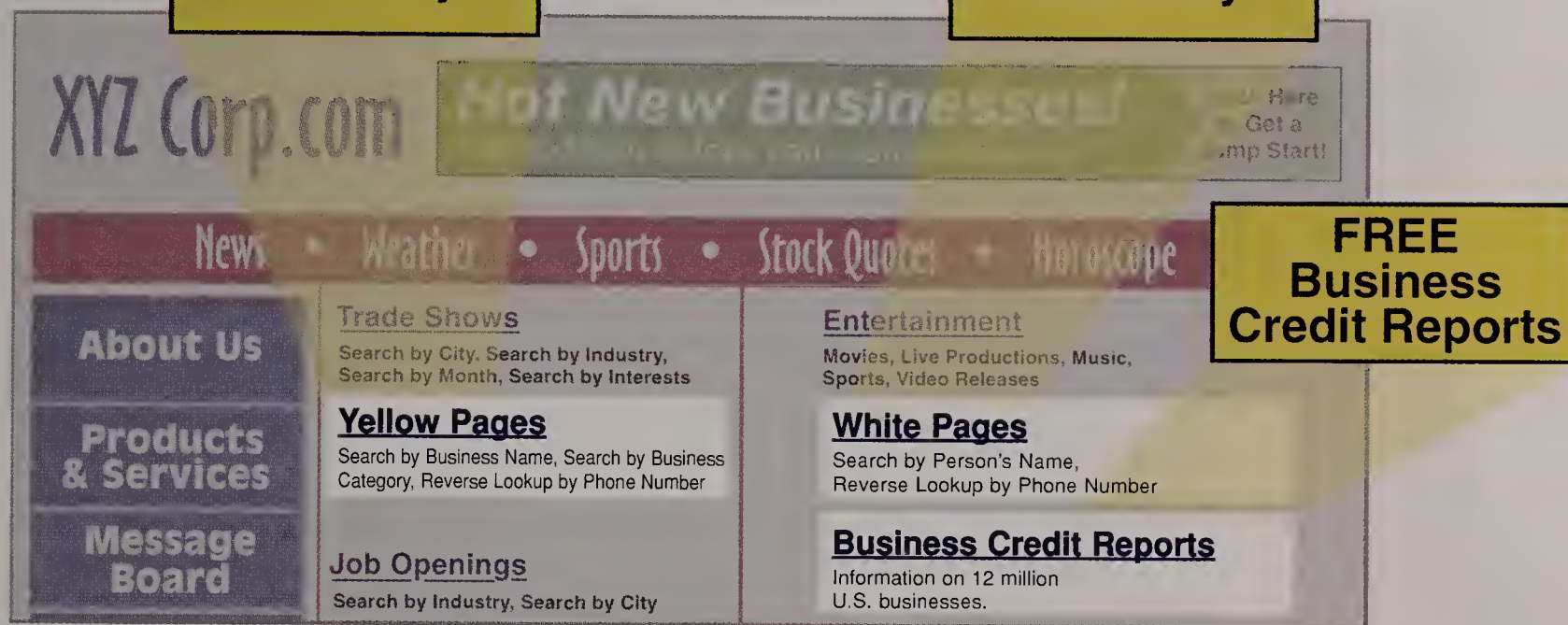
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Reader Feedback

THE O.S. DEBATE CONTINUES

You are absolutely right: A CIO must weigh all factors before deciding on an operating system ["Deciding Factors," *CIO*, Feb. 1, 2000].

I find the claims being made on both sides of the Unix versus Windows debate amusing. In fact, it sounds a lot like the current race for the presidency! One doesn't know whom to trust, and both choices have major limitations.

I'd like to briefly share with you my company's experience with Unix and NT. Too many variants of Unix make it too hard to support. We are businessmen, not hackers. Although Unix might handle a bigger transaction load, when you factor in the lack of a good Unix staff and their cost, and add the cost of the hardware, it is awfully expensive.

At American Protective Services, we run a 24/7 shop entirely on NT 4.0 and Citrix. A

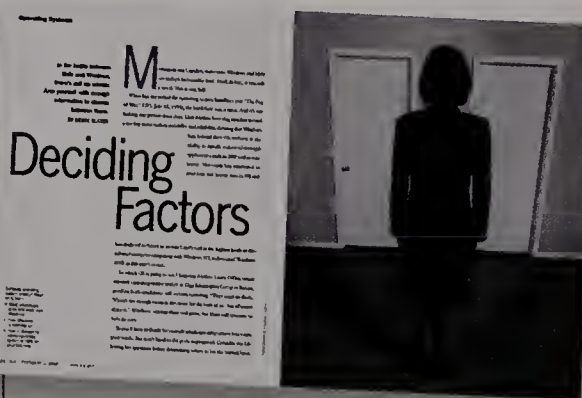
cluster of seven small servers supports more than 250 users and has experienced no downtime for more than a year (try that with Unix!). We run several proprietary applications—PeopleSoft, Exchange and Oracle—and also run our webpage and intranet on NT. The only Unix we have is in our firewall box, and that's only because it came with it.

Our total number of servers is about 35. Again, no downtime for months. Add to it that we have only three system administrators, and they are bored most of the time.

Michael Leonardich
Director, Information Systems
American Protective Services
Oakland, Calif.
mleonard@apsinc.com

My company ships its software on Solaris 7, soon to be Solaris 8. We do this because our customers manufacture the motherboards of computers and cell phones, and they require 24/7 uptime.

I know that one of our competitors in the printed circuit board marketplace uses NT and has made the statement



that the "user shall reboot the machine at the start of every shift," or every eight hours.

We have had machines running for months at a time in some shops, and these machines are very reliable. If NT is that reliable, why would someone say to reboot it every eight hours?

On the user's desktop, NT/Win98 seems to be reasonable, provided you don't get a virus. Solaris on the desktop is immune to virus attacks.

Kerberos is integrated into Solaris 8, which gives the user security because it is less likely his or her machine will be attacked from the outside.

David Barto
Director
S/W Products Machine Vision Products
Carlsbad, Calif.
barto@visionpro.com

I don't understand why anyone would choose a server OS that will not do the job across multiple fronts (Windows) when there's been a server OS that has done it for years (Unix and variants).

An OS that claims to be up to running an enterprise-class server farm but that does not support a telnet server or a DNS server or doesn't come with an e-mail server and won't allow such basic functions as setting disk quotas, is like having a comfortable three-wheel car (the radio sure sounds great, but you can't go anywhere).

Microsoft got its start on the personal desktop, and it will be years (already has been years) before it comprehends and masters the OS needs for an enterprise-class OS.

There is a plethora of stories across all industries of people trying to support enterprise applications on the MS platforms and toolsets, and even with Microsoft at their side, they have thrown in the towel and moved on to a Unix server running a real database engine.

Duncan Wilcox
CIO
HealthBids.com
La Jolla, Calif.
duncan@troutburn.org

"Deciding Factors" was a good article and offered a very balanced view. Speaking as the CIO of a 500-person consulting company that services both NT and Unix in the enterprise market, my company's clients feel that both OSs have their place and often call on us to help Unix and NT play nicely together. That's an area where Microsoft still has a ways to go—the company keeps try-

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ing to redefine standards, but Windows 2000 shows some positive movement.

Don't ignore Linux, it will shortly own the low end. My company has a hybrid environment: Solaris, NT and

together with anyone.

Would you have any other suggestions on how I could go about hooking up with someone as a mentor? I've even looked on the web for some sort

Given the abrupt rise of new competition from dotcom upstarts and the sudden changes in supply lines and customer relations, I don't think being better than your current key competitor is sufficient.

Linux. Oracle on Solaris for the big jobs, like accounting and the bulk of our mission databases, NT for file/print services along with some MS/SQL for specialized products and Linux for everything else. We haven't installed anything but Linux boxes for the last six months; it's just too hard to beat the price-performance point.

In my line of work, we need an interactive login environment for our users to share their work. We often have in excess of 400 consultants logged on to one Sun Ultra. You just can't do that on NT—the capability doesn't exist. But we can do it with a Linux box or even a FreeBSD machine.

Jeffrey S. Tyler
CIO
Collective Technologies
Austin, Texas
jtyler@colltech.com

MENTOR WANTED

I enjoyed your most recent article in your Virtual Mentor series [*CIO*, Jan. 15, 2000]. It is encouraging to see articles like that. I have been searching for a mentor for almost a year now without any luck. The main reason is the location of my company, in a small town of about 50,000, and the lack of time that I have available to get

of "pen pal" thing where I could have a dialogue with someone on issues that come up. There are just so many things that you can't learn in books.

Holly D. Smith
MIS Supervisor
Summit Information Systems
Corvallis, Ore.

Editor's Note: We've heard from many IT executives and managers like Ms. Smith who have trouble finding mentors. CIO's editors are planning a web-based mentor-matching program to facilitate these connections for our readers. If you are a veteran CIO or senior IT practitioner and want to give back to the profession by sharing your insights and a small amount of your time, send a note to Executive Editor Richard Pastore (pastore@cio.com) for more details on this upcoming program, as well as our ongoing Virtual Mentor article series.

KEEP YOUR EYES PEELED

I read your Publisher's Note in the Feb. 15, 2000, issue of *CIO*. Wireless is the wave of the future, but one statement you made was quite erroneous. You wrote, "How much do you know about wireless technology? 'More than my company's key competitor' is the

only correct answer."

Given the abrupt rise of new competition from dotcom upstarts and the sudden changes in supply lines and customer relations, I don't think being better than your current key competitor is sufficient. It may not even be a good point of view because then you'll be looking at the same stuff they are rather than opening up your eyes to brand-new opportunities and threats coming from where you least expect them. While Barnes & Noble was looking to wipe out "mom and pop" bookstores, Amazon.com unleashed a flood of new competition. While record companies are trying to encourage encryption so that they can keep their stranglehold on musicians, bands are direct marketing themselves on the web and encouraging fans to copy and play their music in the good old Grateful Dead tradition.

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CORRECTIONS

"Squaring Off," our Feb. 1, 2000, Total Leadership column, incorrectly listed the URL for a related article on conflict and confrontation. Readers can find that article at www.cio.com/printlinks.

"Buckle Up," the March 1, 2000, Difference Engine column, incorrectly stated author David Shenk's website address. To learn about Shenk's books, visit www.bigfoot.com/~dshenk. We apologize for the errors.

WHAT DO YOU THINK?

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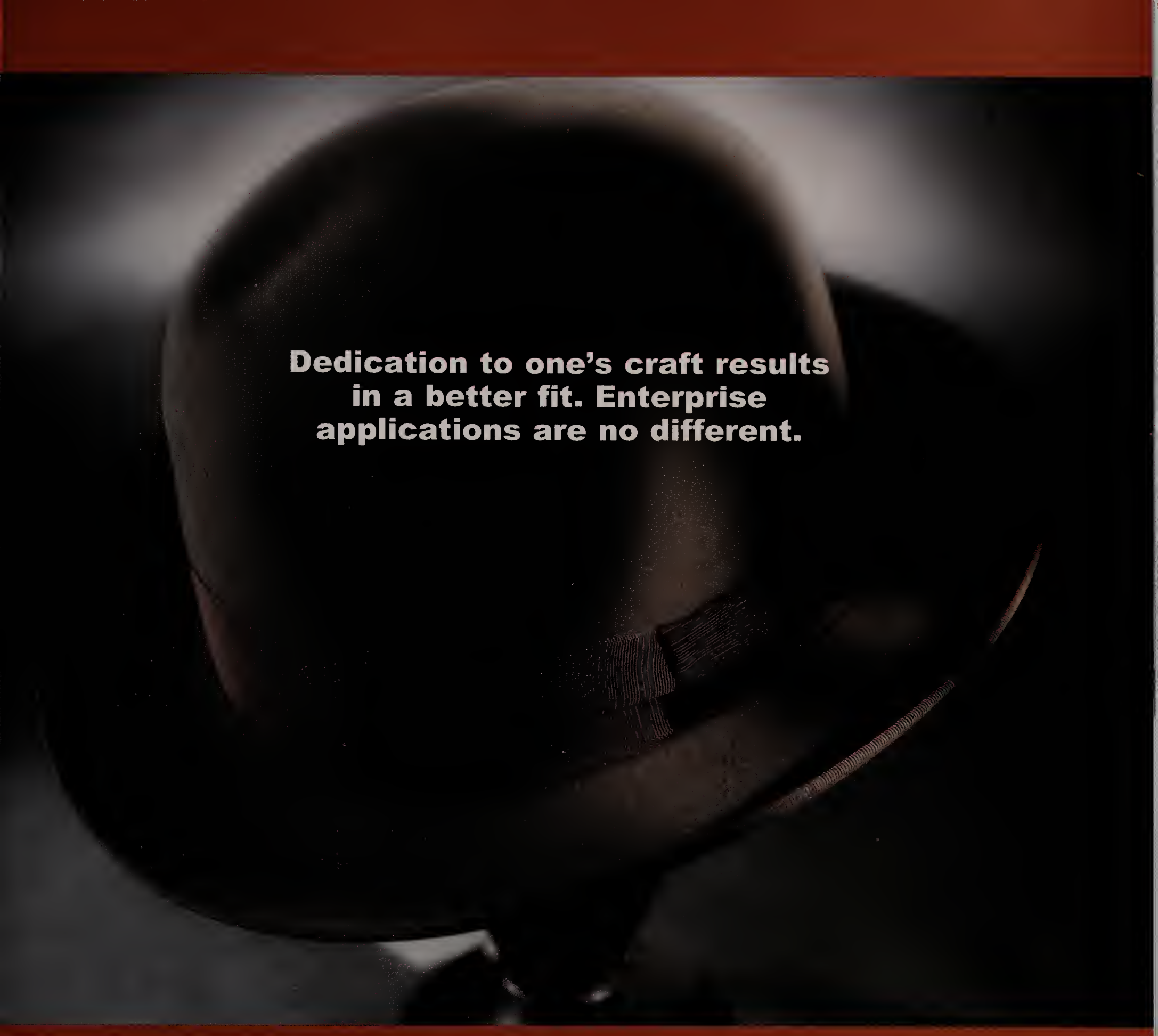


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trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Sandy Kendall

Department of **BIG,** Scary Numbers

42: percent of workers using company equipment to surf the net during work breaks.

1,123,650: number of unrelated webpages an average internet user will drudge through in his or her lifetime.

165,352,000: number of keystrokes an average internet user will make in his or her lifetime. **5.5 MILLION:**

minimum number of new U.S. internet users in 1999. **1 BILLION:**

minimum number of unique webpages now on the internet. And so as not to forget the size of a billion, it's been approximately one billion *seconds* since LBJ announced he would not run for reelection.

Sources: Greenfield Online, The Fortino Group, Data-monitor Networking and Internet Group, and Inktomi Corp. and NEC Research Institute (plus back-of-the-envelope calculations)

M E T R I C S

Opening Day By Meredith Levinson

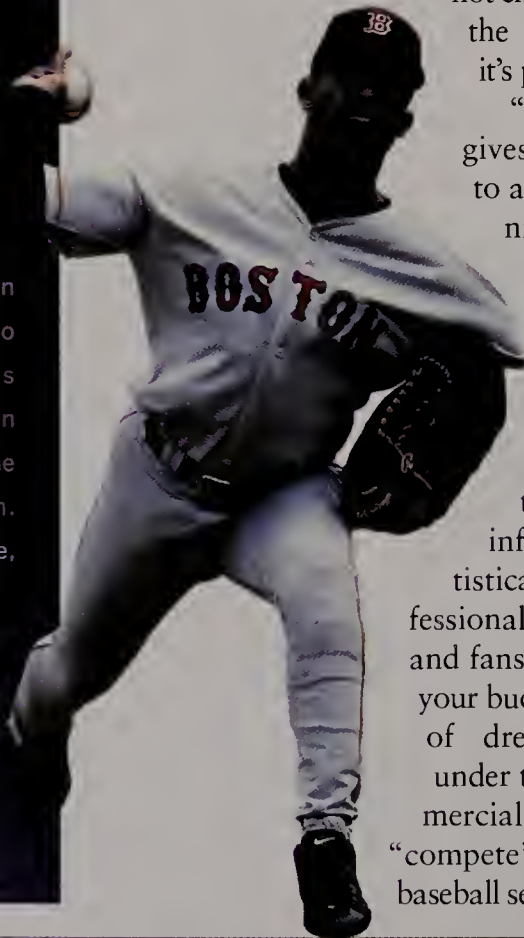
EVEN BEFORE the internet, fantasy baseball was nothing like the games you played with the kids in your neighborhood—where patches of burned-out grass served as bases and a Wiffle ball functioned as your horsehide. Fantasy baseball has always been and remains the game for fans who show their passion for the sport not by playing, but by memorizing players' stats. This month, in the third century to be blessed by baseball, the game's fantasy version enters its 20th year. The web has not changed its rules, just the speed with which it's played.

"Fantasy baseball gives you the chance to act as if you're running a real baseball team," says Steve Byrd, vice president of fantasy sports at Stats, a Morton Grove, Ill.-based company that provides sports information and statistical analysis to professional teams, the media and fans. To play, you and your buddies form a league of dream teams that, under the aegis of a commercial organizing body, "compete" throughout the baseball season. Before open-

ing day, everyone gets together in the flesh or in a chat room to draft 25 to 30 current major league players for his or her team. Each team has a salary cap with which to woo or insult players (highest bidder gets the player). Once the season starts, your team earns points based on your players' performances during their actual games. You get points for things like the number of home runs your players score, bases they steal, winning games your pitcher throws and runs batted in. At season's end, the team with the most points wins.

Before the web, says Byrd, "Leagues would appoint one guy to be the commissioner. His responsibility was to read *USA Today* every day and calculate players' stats and scores." If team owners wanted to add or drop a player, they had to send requests via phone, fax or mail to Stats (or any organization that manages fantasy sports games). Each week, Stats would mail a report to teams with a summary of their standings.

But no more. Today trading players, tracking their performances and calculating team points is virtually effortless, not to mention instantaneous. Stats reporters attend every major league baseball game, recording every strike Pedro Martinez pitches or every runner Ivan Rodriguez erases in a laptop computer, which uploads immediately to Stats' server in Chicago, where the information is stored in a database and simultaneously delivered to many websites (including its own) and TV stations. So even if you're not as fast as Rickey Henderson on the field, you can finally keep up with him on the web.



A LITTLE MADNESS IN THE SPRING IS WHOLESOME EVEN FOR A KING.

—Emily Dickinson

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SOFTWARE

Shiver Me Timbers

WHO ARE THE worst software pirates out there? The Software & Information Industry Association (SIIA) commissioned a third-party study of software use, including an estimate of the percentage of applications in use that were unauthorized. Countries with the highest piracy rates were:

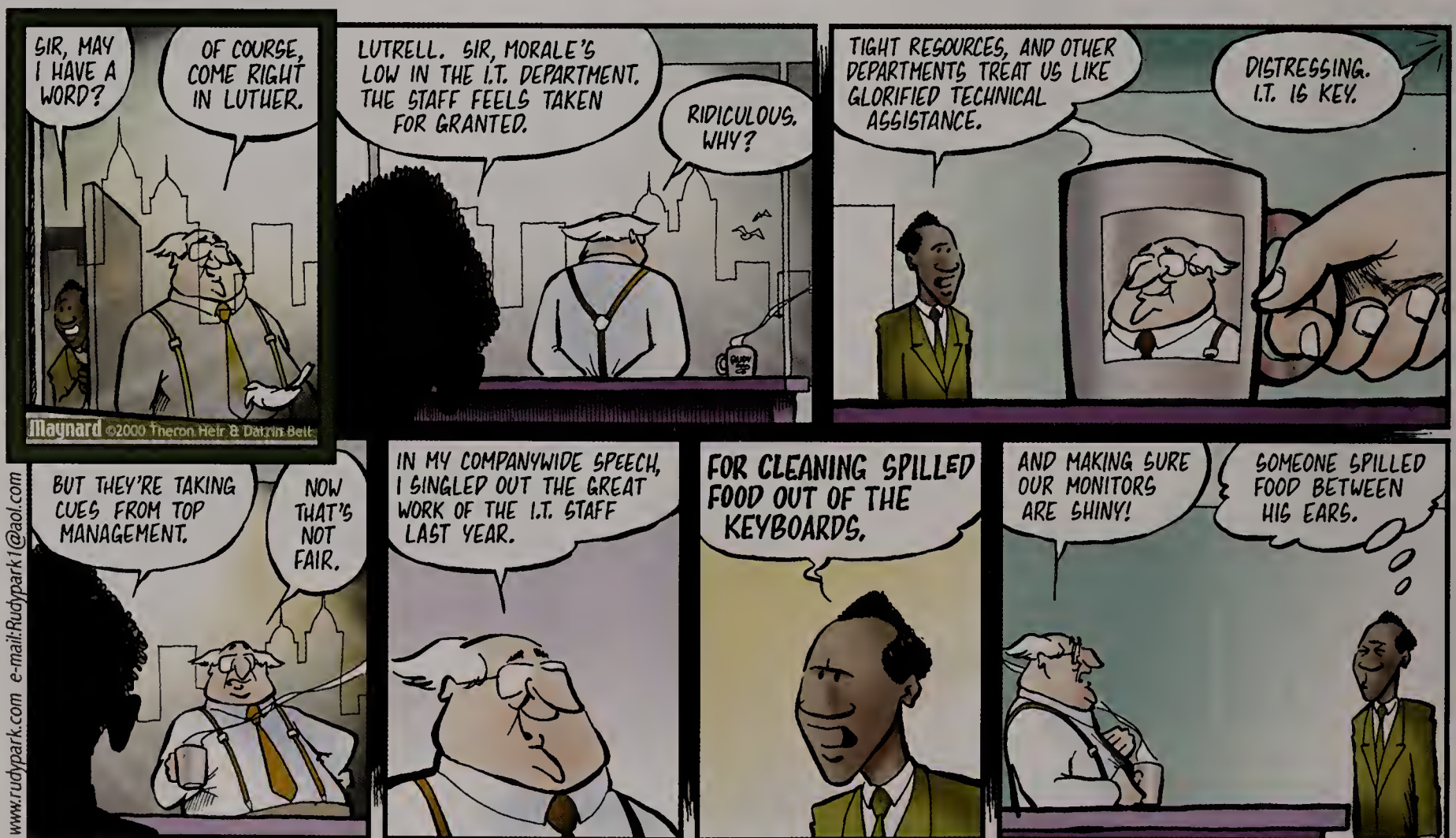
Vietnam	97%	Russia	92%
China	95%	Indonesia	92%
Oman	93%	Bulgaria	90%
Lebanon	93%	Bahrain	90%
CIS - less Russia	93%	Kuwait	88%

The United States has a piracy rate of approximately 25 percent. When translated into dollar figures, that piracy tops the chart, since the United States is the largest user of software. For more information, check www.sii.net/piracy.

SOURCE: SIIA'S 1999 GLOBAL SOFTWARE PIRACY REPORT



Maynard BY DARRIN BELL AND THERON HEIR





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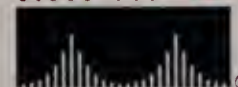
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Washington Watch

By Elana Varon

Congress on Privacy: Pass or Fail?

REMEMBER pulling all-nighters in college? It was hard to block out the distractions until the prospect of flunking your finals loomed larger than the keg in the living room.

Well, for Congress, Election Day is finals. Lawmakers want voters to think it's worth sending them back to Washington. And now that those voters are getting riled up about online privacy, Capitol Hill is paying more attention to the issue.

Naturally, e-commerce companies want the feds to let the marketplace sort out acceptable uses of customer data. So far, that's been reason enough for many legislators to leave the issue alone (and remain eligible for new-economy campaign cash). Don't bet yet on passage of a consumer privacy bill (though one focused on financial privacy has a better chance), but do expect quick action if the public makes more of a fuss.



Edward Markey

Business leaders and privacy advocates are pushing competing proposals. One, advocated by **Rep. Edward Markey** (D-Mass.), **Sen. Richard Shelby** (R-Ala.) and others, would force companies to beg for permission before using the customer's information. The other, proposed by **Sens. Conrad Burns** (R-Mont.) and **Ron Wyden** (D-Ore.), would let them do as they like

unless consumers "opt out" of their databases.

Business wants Congress to at least bar states from passing their own incompatible (and possibly stronger) protections. Some two dozen states are mulling privacy legislation, including Missouri, which has approved a law making it a felony to use personal data without permission.

"The scariest outcome here is the idea that you have different privacy rules if people surfing the web are coming from state A or state B," says **Harris Miller**, president of the D.C.-based Information Technology Association of America. State **Sen. Robert Jauch** (D-Wisc.), in charge of privacy policy for the National Conference of State Legislatures, favors national rules but isn't confident the feds will do a good job of protecting the individual.

While it's all being sorted out, companies can inoculate themselves against future liability by considering privacy and data security when they set up new systems, says **Ari Schwartz**, a policy analyst at the D.C.-based pro-consumer Center for Democracy and Technology. "When companies do privacy or security impact statements, they'll have a lot less to worry about."

Web Enabling the Disabled

ADVOCATES for the disabled hope that upcoming guidelines for making government websites accessible to people with disabilities will also serve as a model for commercial sites.

David Yanchulis, an accessibility specialist with the feds' Architectural and Transportation Barriers Compliance Board, says that many accommodations designed for the disabled (e.g. ramps, curb cuts and big rest room stalls) are popular with mainstream customers too.

But **Rep. Charles Canady** (R-Fla.) worries that the guidelines might become ammunition in lawsuits against companies that haven't, for example, added closed-captioning to video clips or tagged graphics so they can be read by text-to-speech software. Canady, who chaired a House Subcommittee on the Constitution in the hearing on the Americans with Disabilities Act and the internet in February, wants to see what the courts say about a case filed by the National Federation of the Blind against AOL last year demanding that AOL change its software to work with Braille or audio translation tools.



Charles Canady

Find information about these federal guidelines at www.access-board.gov. For updates on these and other government topics, check out the Government and IT Policy Research Center on CIO.com.

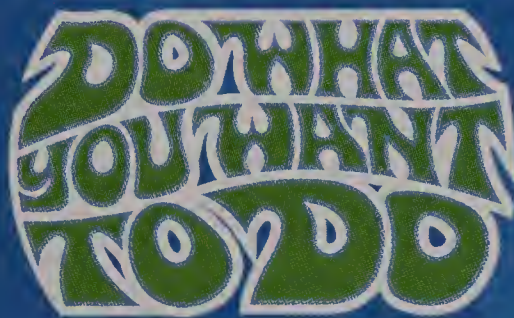
Got news or views on IT issues in Washington? Send them to washington@cio.com.

"Both parties are trying to claim the high-tech industry is theirs. That's a very good position to be in for an industry."

—William Archey, president and CEO, American Electronics Association

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TRAINING

For All the IT in China

CHINA'S I.T. MARKET is expanding faster than any in Asia, according to a recent report by IDC, a sister company to CIO Communications. Other experts predict that by year's end it will have one of the largest IT markets in the Asia-Pacific region. Despite this growth, however, some Chinese IT executives feel they still have a lot to learn. Like, for instance, what *is* a CIO?

In January, representatives from some of Shanghai's most technologically sophisticated companies met with IT leaders from California and New York to talk shop and pick up some tricks of the trade. This was part of an international training program sponsored by New York City-based AppliedTheory Corp., Shanghai Information Investment and the Office of Shanghai National Economy & Society Information Leading Group. The goal: to train and certify current and future CIOs to help lead China's internet revolution.

"We are just beginning to understand what the CIO is all about," says Yuan Zhi Qing, manager of the IT department at the Shanghai office of Lucent Technologies. "The concept has been in our minds, but we haven't known how to incorporate that into a business strategy until now."

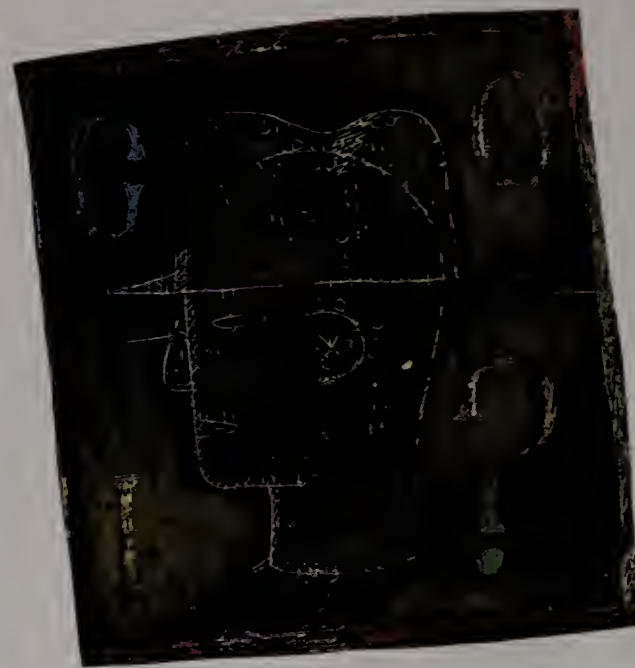
In October Qing and 30 other IT leaders met at a Shanghai college for a three-week training course on internet and business strategies. Instructors from Australia, Canada and the United States taught concepts such as e-business and business process reorganization. Six weeks later, the group traveled to the United States for two weeks to meet their counterparts at U.S. companies, including Apple Computer, Cisco Systems, Bristol-Myers Squibb Co. and Morgan Stanley Dean Witter & Co.

Meeting with executives from Bristol-Myers, for example, they gathered around the desk of Senior Director for Corporate Information Management Judy Cottone and grilled her about her job. What are her day-to-day responsibilities? How does she make decisions? How does one get to be an IT executive in the United States in the first place? "They left no stone unturned,"

says Cottone, who volunteered her time. "It was wonderful to see such curiosity."

During their farewell celebration the Chinese executives received certificates and summed up what they'd learned, speaking of reorganizing, developing e-commerce programs and implementing intranets—strategies many said they never had considered before. "The people [in the U.S.] have opened our eyes to so much about information technology," said Qing. "Now it is up to us to make these ideas work in China."

—Matt Villano



Sweet Success

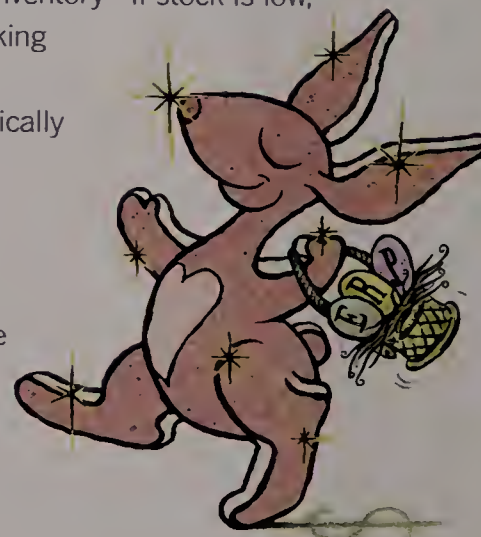
Edible bunnies. Sugar-coated eggs. Marshmallowy chickens. Makes your teeth hurt, right? But as Easter approaches, candy makers steel themselves for the last holiday in the triumvirate they bank on: Christmas, Valentine's Day and Easter. Small companies in particular rely on the sweet spots in the calendar to make up for slower sales through the rest of the year. Not long ago, Lake Champlain Chocolates of Burlington, Vt., tried to manage the peaks and valleys of its yearly production cycle with paper and dry-erase boards. Tracking inventory, sales and production schedules and profits and losses that way was a logistical nightmare. For instance, four employees spent almost 24 hours a month counting and weighing all of the raw ingredients and packaging materials—some 360 SKUs, according to Curt Erikson, Lake Champlain Chocolates director of operations. But in fall 1998, the company implemented Syspro Impact Software's Impact Encore ERP package to help it cope with the market's sugar rush. The company expects to reduce the time spent taking inventory to six hours per month.

Each week, salespeople enter orders into the system. Based on their orders, it determines how much cocoa, cream and butter the company will need to produce all those bunnies and truffles, as well as how much foil and ribbon it will require to package them. It then checks the company's inventory—if stock is low, the system suggests purchase orders. Easy as taking candy from a...well, it's simple.

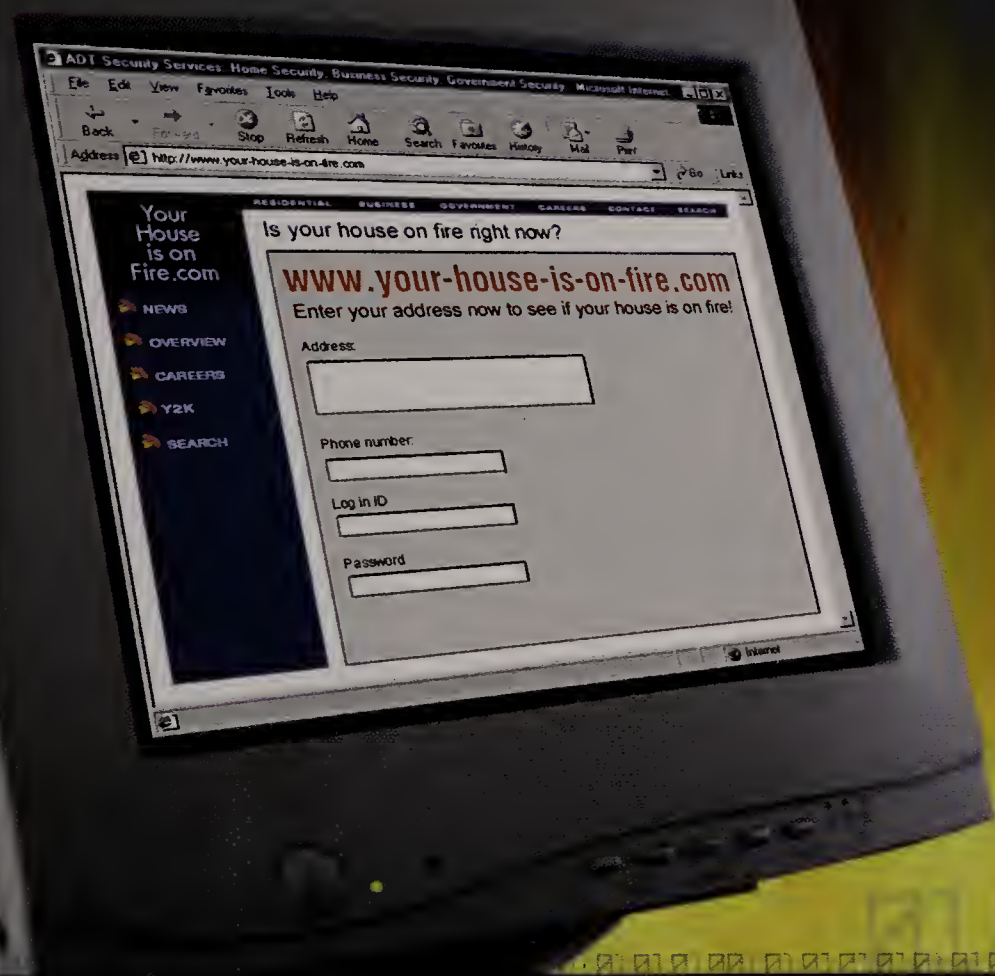
Erikson explains that the ERP system automatically flows into shipping and receiving information the accounting department's general ledger, allowing the company to better manage its profit-and-loss statement.

Though they wouldn't tell CIO the secret recipe for Lake Champlain's confectionery success, we got the feeling that technology might be just as important an ingredient as chocolate.

—Meridith Levinson



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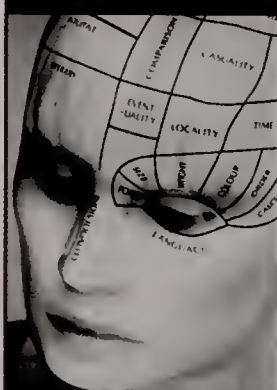
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“It’s not Big Brother that we now have to be afraid of, but Big Browser.... Things that you haven’t thought about can substantially undercut your privacy.”

—Eliot Spitzer, New York’s Attorney General



HOT TOPIC



KNOWLEDGE MANAGEMENT

It's a Jungle in There

By Carol Hildebrand

The bigger a company gets, the easier it becomes for its accumulated intellectual property to become an overgrown tangle. But losing track of intellectual assets can run you afoul of

the law. Although recent legislation protects corporate intellectual goodies such as trade secrets, copyrighted materials or proprietary material developed in-house (see “Choose Your Poison,” Page 132, and “The Death of Cybersquatting,” Page 60), many companies have no idea whether they may be breaking the law themselves or letting others make off with their own intellectual assets, says Lynne Hall, managing director at Management Counsel in New Haven, Conn.

Hall has developed a methodology for what she calls an intellectual

capital audit that helps companies inventory their intellectual assets and extract the greatest value from them. She customizes the audit for each client but uses questionnaires, surveys and personal interviews to identify human assets such as knowledge and skills, intellectual assets such as publications and memoranda, and intellectual property such as patents, copyrights, trade secrets and trademarks. The process varies in length; for one client it took nine months, for another, which wanted a more comprehensive survey, Hall’s assessment took 18 months.

The audit works as both defense and offense, she says: Company A gets a view of its own internal noncompliance with the legislation, but it also gets a chance to check out how company B is infringing on A’s property.

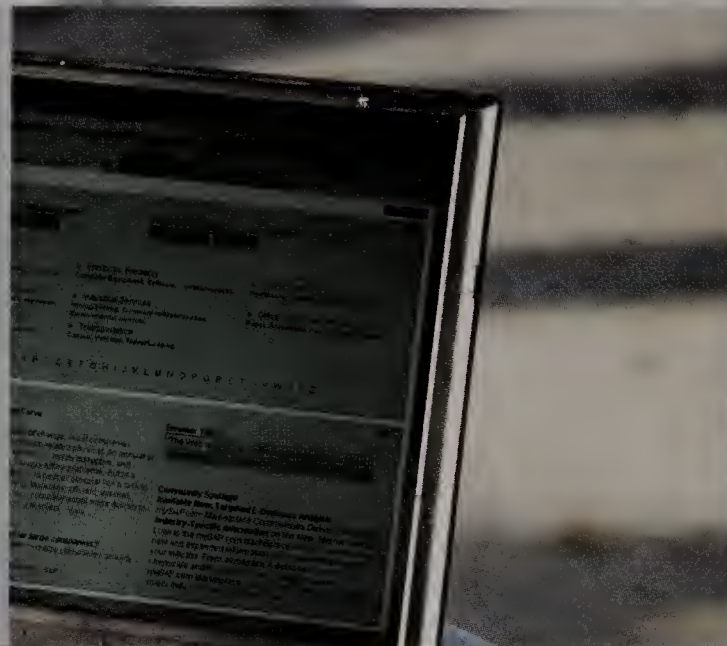
Hall tells of one high-tech corporation she audited. She found it was victim to “infringements of all kinds

that resulted from the company’s failure to map [its own] intellectual property, as well as [that of] direct and indirect competitors.” It didn’t adequately protect clusters of its own intellectual properties, and in some cases, unintentionally abandoned such properties by forgetting to pay patent, copyright and other fees, she says. Hall also confirmed, through reverse engineering and object and source code analysis, infringements from three direct competitors. By designing a process to track intellectual property policies, practices and procedures, as well as some sales, joint venture and licensing agreements with the competitors, Hall estimates that the company will add \$500 million in revenue over the next five years.

Not all her audits will yield such a bonus, she admits. “But, just like anything else, a corporate portfolio of assets needs to be strategically leveraged and managed.”

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Vive le Minitel

The French take pride in doing things a little differently. They eat cheese at the end of a meal. They celebrate a prison burning as their national holiday. They drive Renaults. So it should be no surprise that the Gaulois have an alternative to the internet, Minitel, and a different method of generating revenue from this online service than banner advertising.

Brought to French households as early as 1983, Minitel is the name for the 6.3 million dumb computer terminals from which citizens can access online services. Thanks to Minitel, the French have been engaging in cybersex, banking online and accessing electronic phone directories long before the rest of the world logged on to the web.

Bruno Chaintron, director of Minitel for France Telecom, the national carrier that developed the system, says, "Minitel is a business model. One that made it possible to create an industry of online content providers in France that comprises 18,000 different online services that are all profitable."

Touché, American dotcoms!

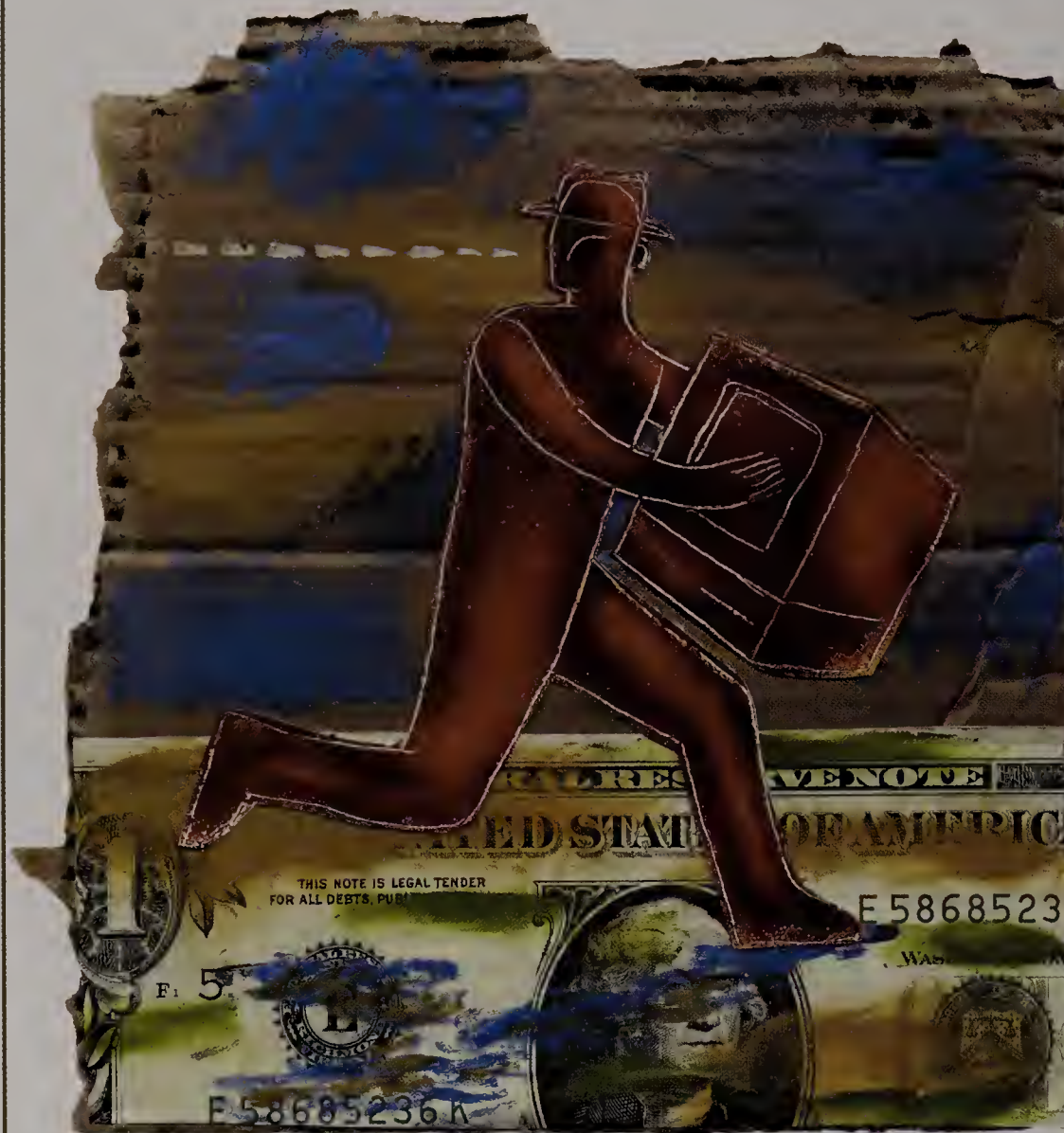
France Telecom charges users for the time they spend online. Prices vary by service, and charges appear on a customer's phone bill. In 1999, of the 5 billion francs that France Telecom generated from Minitel, 3 billion went to content providers. With the rest, the company covered costs and made its profits.

Many foreigners (read Americans), in love with by the web's flashy GUIs, are quick to mock Minitel for its antiquated technology and black-and-white text interface. But, argues Chaintron, "In spite of the technology, the business model is still up to date." That's one thing France Telecom doesn't intend to change. "It has no equivalent elsewhere," he adds.

—Meridith Levinson

tions about restricting speech. Companies doing business in Indonesia, for example, need to know that the government forbids posting content relating to sadism, mysticism, consumerism, hedonism or feudalism, says Maury D. Shenk, a senior associate with Steptoe & Johnson in Washington, D.C. "I'm not sure what feudal content is," he says. "But don't do it in Indonesia."

—Jennifer Bresnahan



T H E L A W

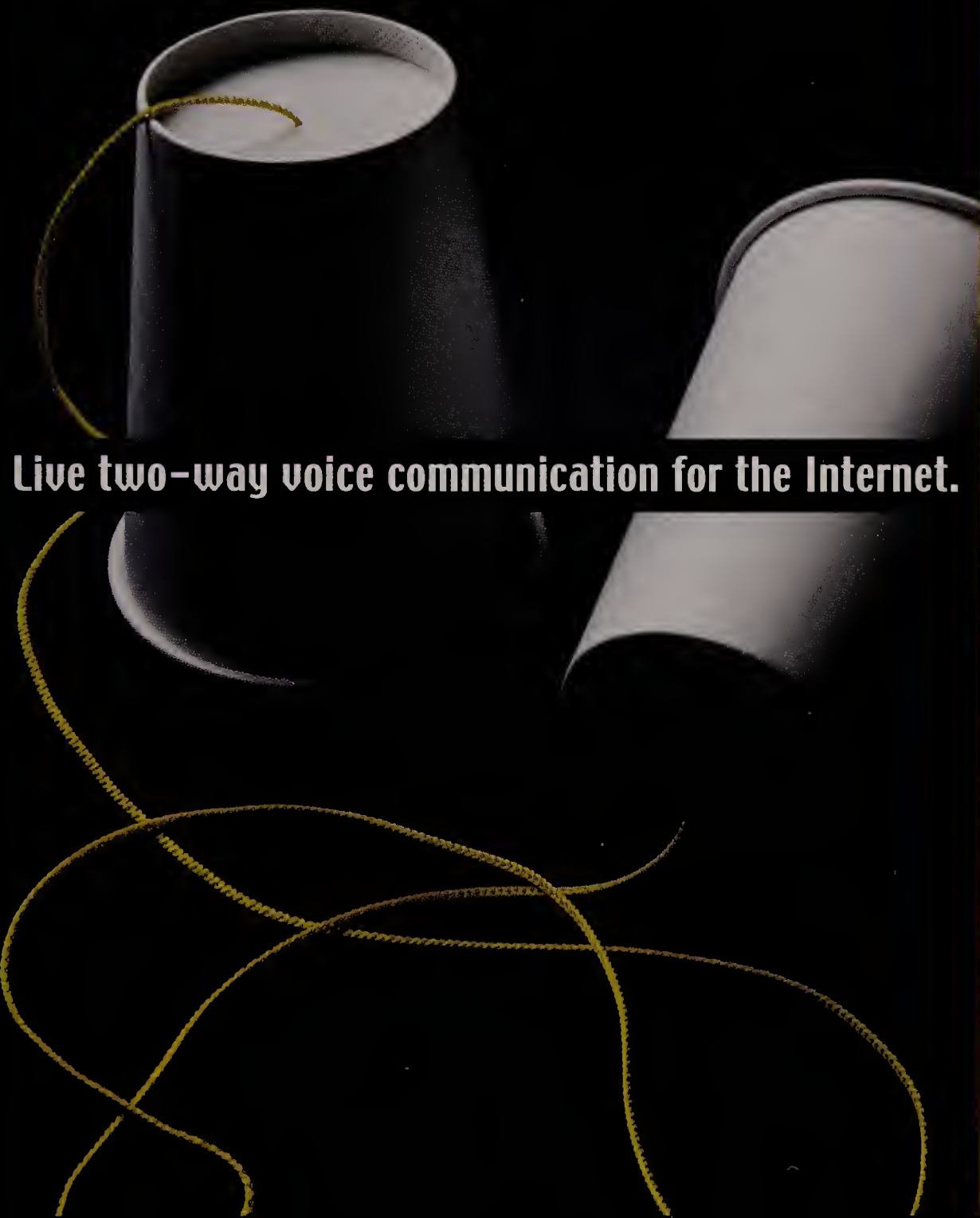
Reasons to Be Fearful

TAXATION Every county, state and country has its own system for taxing the sale of goods. Currently, these taxes don't apply to the internet. Requiring a company to locate every buyer and determine what tax schemes that region uses would be too onerous a burden for most companies. Some constituents are pressuring lawmakers to develop a universal system for internet taxation. The World Trade Organization and a U.S. congressional committee are both busy at work. Industry watchers predict that one or both of these groups could announce a proposal in 2000.

CYBERLIABILITY Old legal theories applied to the computerized world get the catchy moniker *cyberliability*. In this realm the corporation usually assumes responsibility for the actions of its employees. But

sometimes aggrieved parties can sue individual employees. Executives are vulnerable because their positions as officers of the company carry duties of fair dealing and good faith. Cyberliability also includes the danger of being held accountable for content on a corporate website. Say a site offers a home remedy for sore throats that involves gargling with honey. If a consumer follows the advice and then has an allergic reaction, is the company liable? At the moment, the answer is anybody's guess.

NATIONAL NORMS Companies that have anything to do with online content delivery need to be aware of different countries' regulations governing internet content. Not all countries feel compunc-



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Off the Shelf

Edited by Carol Zarrow

Playing to Win

Serious Play: How the World's Best Companies Simulate to Innovate

By Michael Schrage

Harvard Business School Press, 1999, \$27.50

Have you been giving short shrift to your simulations? Ignoring your prototyping portfolio? Michael Schrage, a research associate at the MIT Media Lab, has written a book that may force you to rethink the way your company innovates.

Prototyping and other creative brainstorming processes are the "serious play" that leads to breakthrough innovations.

Among other examples, Schrage uses auto manufacturing to show how faster prototyping changed an industry.

Until the early 1990s General Motors used computer-aided design (CAD), but only after building a clay model first. Toyota, on the other hand, designed cars entirely with CAD, making its speed-to-market twice as fast as GM's.

Changing an existing prototyping culture is not without perils, and flawed assumptions can wreck not only prototypes but entire companies. But Schrage builds a convincing argument that the way companies design and interact with simulations lies at the heart of breakthrough innovation.

—Todd Datz

Simplicity: The New Competitive Advantage in a World of More, Better, Faster

By Bill Jensen

Perseus Books, 2000, \$25



If he were truly interested in bringing simplicity to the huddled corporate masses, consultant Bill Jensen would have started with his own book. He repackages some well-worn communication theories with homey anecdotes, old survey results and quotes from people in well-known companies, and exhorts readers to revolutionize communication at their companies. His own revolution should include a red pen.

—Christopher Koch

CIO Best Seller List

5.

Selling the Invisible: A Field Guide to Modern Marketing

by Harry Beckwith
Warner Books, 1997

4.

The Dance of Change: The Challenges to Sustaining Momentum in Learning Organizations

by Peter M. Senge et. al.
Doubleday, 1999

3.

Built to Last: Successful Habits of Visionary Companies

by James C. Collins and Jerry I. Porras
HarperCollins, 1994

2.

The Fifth Discipline: The Art and Practice of the Learning Organization

by Peter M. Senge
Doubleday, 1990

1.

First, Break All the Rules: What the World's Greatest Managers Do Differently

by Marcus Buckingham and Curt Coffman
Simon & Schuster, 1999

SOURCE: March 11, 2000 data, compiled by Powell's Books, Portland, Ore.

TELL US what you're reading and why at books@cio.com

What They're Reading

Keith Powell, senior vice president for information services and CIO, Nortel Networks Corp., Brampton, Ontario

Powell recommends three books from his night table: *Business @ the Speed of Thought: Using a Digital Nervous System*, by Bill Gates (Warner Books, 1999); *Net Future: The 7 Cyber Trends That Will Drive Business, Create New Wealth and Define Your Future*, by Chuck Martin (The McGraw-Hill Cos., 1998); *The Secret of a Winning Culture: Building High-Performance Teams*, by John R. Childress and Larry E. Senn (The Leadership Press, 1999).



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The Power Between.

ASSET MANAGEMENT

How to Spot a Recycling Policy Gone Bad

HEY. A vendor with a sense of humor. Enterprise recycling company Redemtech sent this little checklist around:

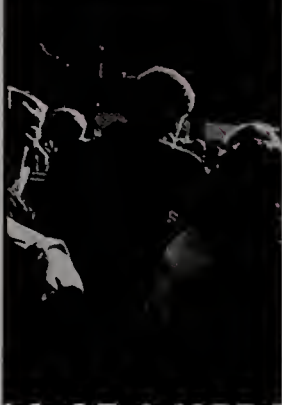
Technology recycling has gone bad if my computers end up:

- 1** In my competitor's marketing department
- 2** In the clutches of Hackers-R-Us
- 3** In an unfriendly Third World nation
- 4** Being ransomed back to me for records I'd prefer not to discuss
- 5** At the office of Black Market & Illegal Software
- 6** In an unauthorized dump site being cataloged by an EPA investigator up to his knees in garbage
- 7** In a dark corner of our crowded warehouse where my boss is headed right now...looking for storage space
- 8** At the state prison rehabilitation center for white-collar crime, with all my personal records
- 9** At the R&D building of a business intelligence provider
- 10** Being sold for tens of thousands of dollars by the peddler who took it away for free
- 11** Or, finally, hiding in closets and desks all over the office, waiting for some direction from the person I assigned the responsibility



Source: Redemtech, a subsidiary of Micro Electronics in Hilliard, Ohio

HOT TOPIC



STAFFING

Winning Hearts and Minds *By Tom Field*

Middle school: when young people get serious about academics, the opposite sex...and IT careers? That's what some St. Louis-area businesses are hoping. They've banded together with local middle schools

in a new program designed to inspire adolescents to picture a future as high-tech workers. The program, developed under the auspices of the Workforce Enhancement Committee of the St. Louis Regional Chamber and Growth Association (RCGA), brings teachers and IT professionals together to introduce 6th, 7th and 8th graders to IT skills and concepts.

Two companies, biotech giant Monsanto and the business consultancy Maritz Performance Improvement, kicked off the pilot of the IT Career Awareness Program last fall. IT professionals from those companies had spent the previous summer working on lesson plans with teachers from two schools (as well as giving them a crash course in corporate IT). This semester, the number of school-company partnerships has increased to five; when the program moves from pilot to formal rollout next fall, 30 schools and companies are expected to be participating.

Program developers were responding to the pinch in IT staffing woes as well as statistics that show only about 3 percent of current high school students indicate an interest in IT careers. "It seemed like we were dealing with a lack of knowledge about technology careers," says Linda Becker, director of professional development at Maritz, "as well as a bit of an image problem"—the geek stigma. Becker, along with Maritz Director for Learning Technologies B.J. Kamler and Monsanto IT Training Coordinator Lisa Hays, designed and implemented the program and helped brainstorm lesson plans last summer.

By bringing IT professionals and students together, the RCGA hopes to bridge IT awareness gaps and steer a few students toward prospective high-tech careers. Middle school students were targeted, Becker says, because "they're more impressionable than high school students—a little more excited about learning."

For the companies, the investment is small: the RCGA is asking for companies to donate only a couple of people for a couple of hours per week. The payoff, though, is tricky to measure. Yes, there is the prospect that staffing-starved companies can do a little bit of recruiting, but who can predict which of today's middle school students will become tomorrow's IT workers? But Becker offers a different incentive for companies to invest in IT education: "Even if kids don't end up picking IT as a career, they'll still be better educated consumers and be smarter about technology."

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Eyes Wide Open

For e-commerce innovations, the Silicon Valley startup model may not be ideal

BY STEVEN C. CURRALL

THE TREMENDOUS VALUE Wall Street places on e-commerce and dotcom startups has many in the Fortune 500 thinking small. To get in on the action, these corporations are structuring their e-commerce efforts along the organizational lines of the Silicon Valley startup—creating corporate spin-off companies with their own executives, physical location and strategies (including stock options). Seems simple enough, and it frees the effort from bureaucratic interference of corporate HQ.

Yet the Silicon Valley startup model is not infallible. Notwithstanding all their advantages, startups often make flawed business decisions.

One reason that big corporations seem so bureaucratic to the young entrepreneurs in Silicon Valley is that they're relatively cautious making decisions. Over time, a big company builds in layers of risk protection designed to prevent rash decisions from threatening the stability of the company. Of course, the downside of that protective behavior is that good ideas are often buried or defanged of any risk, even if that risk may have a tremendous potential payback down the road.

But while big companies often smother risk, small startups



fan the passions behind risks that may not be worth taking.

When I teach executive MBAs about decision making, I begin with a simulation called the "dollar auction." I auction a real dollar bill, and the highest bidder wins. But I impose one more rule: The second highest bidder pays me his or her bid and gets nothing. This adds a crazy competitive element that has netted me up to \$20 for a single dollar bill!

Of course, that makes no rational economic sense. After all, a dollar is worth a dollar, right? Wrong. Under certain conditions, individuals exhibit what Barry Staw, a professor in the business school at the University of California at Berkeley calls the "escalation of commitment." Once a person starts to bid on the dollar, he or she may keep spending money beyond the point of economic rationality.

When a startup becomes obsessed with being first into the marketplace, or beating one or more rivals for market share,

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the startup may expend resources (financial or human capital) the same way. Of course, for a startup to be successful, it must have some innovation that provides competitive advantage over others. Yet, it is the obsession with speed to market that leads startups to skip a thorough decision-making process when it comes to hiring people or spending money.

Further exacerbating things, founders of a startup are often ex-employees of the companies with which they compete. Corporate spin-offs may be staffed by employees who are determined to show their former peers or rivals back at HQ that they can make it work. This can breed an obsession with "beating" the old or parent company. Such single-mindedness

Startups invest a nearly unquestioned level of trust in successful dotcom entrepreneurs. I call it the halo effect.

should send up a red flag because it can lead to narrowly focused resource allocation decisions such as devoting too many people to pulling market share away from the old or parent company rather than looking for new channels or focusing on other competitors.

As obsessed as young companies become with their old colleagues, they can be even more distracted by successful dotcom entrepreneurs, investing a nearly unquestioned level of trust in some of these individuals. I call it the "halo effect": Young entrepreneurs believe that whatever advice the famous entrepreneur provides should be taken lock, stock and barrel.

But dotcom success cannot be generically applied across industries. Just because someone has launched profitable dotcom startups in the retail industry does not ensure that he or she can successfully cross over to online efforts in the plastics or chemicals industries, for example. Moreover, many seasoned entrepreneurs later become angel investors or venture capitalists. As investors, the advice of such individuals can be tainted by financial motives.

But perhaps the most dangerous mind-set common to startups is what Professor Herbert Simon of Carnegie Mellon University calls "satisficing." In their rush to be first to market—often their only true competitive advantage—startup companies tend to hire the first minimally acceptable applicant for the CEO, CFO or COO positions without interviewing multiple applicants or checking references.

Founders of web startups are typically folks with a technical background. As a result, many are poor judges of business executive talent. For example, founders often say to me, "Gee,

this person has a terrific business background, and he's available; we think that he can be our first CEO." When you hear founders talk about hiring based on availability, it should come as no surprise if the new CEO, CFO or COO fails miserably six months later. This then creates a crisis early in the startup's development from which it may never recover. Crises concerning top executives contributes to the high casualty rate for startups.

This advice is, of course, not rocket science—a company should never hire a top executive without thoroughly checking the candidate's references and background information. They should take the two to three necessary weeks to interview other candidates (even the competitive landscape in the dotcom world typically takes longer than that to shift). By interviewing and listening to other candidates, as well as learning what's available out there in the executive talent pool, a startup's founders can reduce the odds of making poor decisions based on a pathology of trust or "satisficing."

Armed with information about decision-making flaws to which startups are particularly susceptible, large companies can better design their e-commerce and/or dotcom efforts. Perhaps the startup model is not ideal after all. Perhaps a hybrid is best. For example, do you ever wonder how the resources of a major corporation can be used to avoid flawed business decisions? Here's one way. Take that sleepy human resources department in your corporation and use it to do all the testing and background checking of applicants for executive positions for a new corporate spin-off. This is a great way existing corporate infrastructure can be put to good use to enhance the quality of decision making about executive talent for your new spin-off. After all, there are lots of great business ideas out there nowadays, and there's lots of financial capital—executive talent, on the other hand, often determines which new businesses succeed and which fail.

At any rate, let us not jump on the bandwagon of the startup model without understanding it better. Should the large corporations launch their e-commerce efforts by creating their own spin-off startups? Maybe. But it is important to approach this question armed with the knowledge that startups suffer their own weaknesses when it comes to business decisions. **CIO**

Has your company launched an e-commerce spin-off based on the Silicon Valley model? Tell us what works and what doesn't at neueconomy@cio.com. Steven C. Currall is associate professor of management and psychology at Rice University and director of the Rice Alliance for Technology and Entrepreneurship. Currall can be reached at scc@rice.edu.



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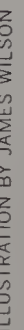
In the shadows of legislation,
legal disputes linger on

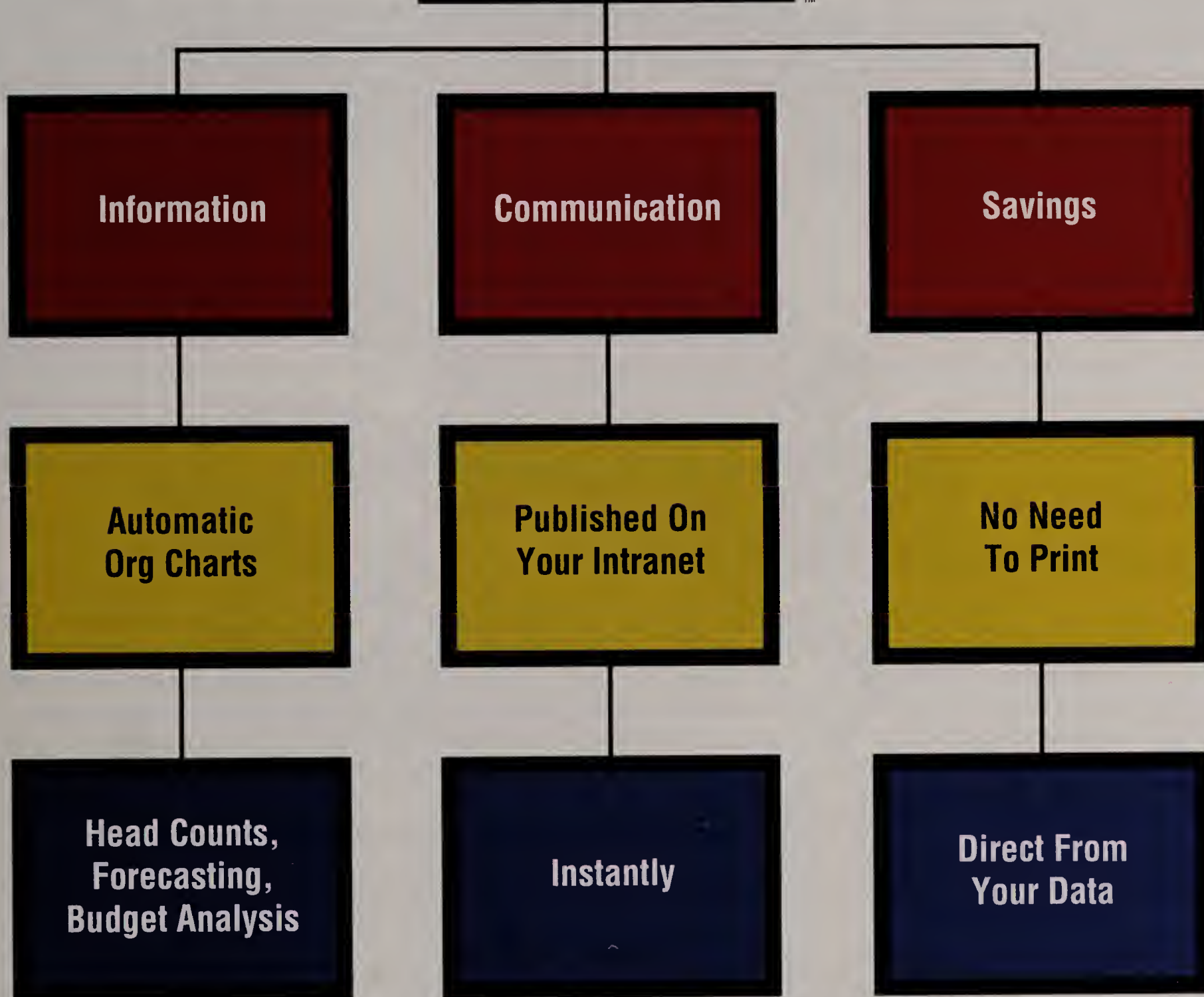
CONGRESS HAS MADE IT OFFICIAL: Those who hoped to make large sums of money by registering internet domain names that intentionally incorporate the trademarks of others are out of business. Yet internet domain names continue to attract a great deal of attention. And no wonder. Despite persistent and generally successful attempts to thwart cybersquatters, names such as *www.business.com* and *www.buy.com* are still fetching multimillions in legitimate transactions. The temptation to make a quick buck selling domain names has not waned over time.

Some clear rules were definitely needed. Even in the internet's infancy, legal questions arose: People who realized the value of URLs began registering corporate names for \$70 in hopes of selling them back to their trademark owners at an extremely inflated price. (See "Your Money or Your Name," *CIO*, Jan. 15, 2000.) Trademark holders had very little recourse against these enterprising cybersquatters.

The courts grappled with the issue of cybersquatting for a few years, and then Congress attempted to deter it altogether through federal law. In November 1999, President Clinton

signed the Anticybersquatting Consumer Protection Act (ACPA). It imposes civil liability of up to \$100,000 in statutory damages for anyone who, with a bad-faith intent to profit, “registers, traffics in or uses a domain name that is identical to, confusingly similar or dilutive of” an existing trademark or personal name. The Act was very narrowly tailored to apply only to cases in which the domain name registrant acted in bad faith in registering a name belonging to someone else. It therefore will not apply to cases where the registrant is unaware of a trademark status or has registered the domain name for reasons other than a bad-faith intent to profit. Similarly, the Internet Corporation for Assigned Names and Numbers (ICANN) quickly created its Uniform Domain Name Dispute Resolution Policy specifically to address the straightforward bad-faith registration disputes. Seems clear enough, right?





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Unfortunately, the attempt at a bright-line rule to clearly and cleanly resolve the cybersquatting issue, while shedding light on cases of obvious bad faith, has cast bigger, more uncertain shadows in other areas. In these shadows lurk disputes that the legislation does not help to avoid or resolve—where factual issues surrounding bad faith are unclear or very similar names are being legitimately used by two valid trademark holders. They are the battles that will continue to be fought at great cost with little guidance.

In the Shadows

The first case brought under the ACPA was filed in December 1999. The dispute involved Harvard University and an individual who allegedly registered over 60 domain names containing “harvard” or “radcliffe,” including *harvard-lawyers.com* and *harvard-alumni.com*. Harvard alleged in its complaint that the registrant offered the domain names for sale and specifically offered the university first right of refusal to them. If such allegations can be substantiated, the court will

The courts, and now Congress, have tried to balance the rights of the trademark holder against the threat of so-called reverse domain name piracy.

likely—by force of the law’s clear mandate—transfer the infringing domain names to the university and award it damages and attorneys’ fees. (The decision is pending.)

But the Harvard case may be the only clear-cut application of the ACPA we see. In a Christmas Eve 1999 filing, the New York Yankees sued Brian McKiernan, a Queens, New York, resident, under the Act over McKiernan’s ownership of *newyorkyankees.com*. McKiernan claims he registered the domain name with the intent to run a noncommercial fan site, although for two years he failed to establish such a site, he says, because of cease-and-desist letters from the Yankees. McKiernan says he has never offered to sell the domain name to the Yankees; the Yankees say he demanded \$25,000 for it. This demonstrates the messy reality of the majority of these disputes, which are going to boil down to the provable, or most believable, set of contradicting facts. Even so, what happens in cases of true nonuse or noncommercial use? Or harder still, what about parody and critical commentary sites operating for no commercial gain? It remains to be seen how the courts will interpret the Act in such gray areas.

Score One for the Little Guy

Even before this legislative weapon existed, the domain name

tug-of-war pitted freedom of speech and artistic expression against the rights of trademark holders. Then, as now, it was not always the case that a company holding a trademark could stop others from using it as a domain name. The courts, and now Congress, have tried to balance the rights of the trademark holder against the threat of so-called reverse domain name piracy—the use of trademark status and a bankroll to bully legitimate uses of the same or similar names. So the courts have not always sided with the trademark holder.

For example, in August 1999 the 9th Circuit held in *Avery Dennison v. Sumpton* that it would not evict a domain name holder under the Federal Trademark Dilution Act (FTDA) of 1995, where the domain name holder states a legitimate purpose for having the domain name, and the trademark owners cannot show that its mark is “truly famous,” or that there is some rational basis for believing the mark will be diluted. Avery Dennison, a multinational label and packaging equipment producer, tried to stop Sumpton, the president of a small company that had registered more than 12,000 surname domains as part of a vanity e-mail concept, from using the domain names *www.avery.net* and *www.dennison.net*. Finding that Sumpton’s use would not tarnish or blur Avery’s mark, and rejecting Avery’s argument that its name was so famous it should be protected from any third-party use of it, the court found

in favor of Sumpton, permitting his intended use of Avery and Dennison. This decision suggests that, under a dilution theory, large companies with unique marks, such as Nabisco or Honda, may be protected, but more common (that is, less famous) marks may remain unprotected. Though that may sound unfair, it’s consistent with the principles behind dilution that give greater protection to trademarks whose owners have invested extraordinary amounts of time and money to make them successful.

Apparent fame may not guarantee enough protection, however. Hasbro, the well-known toy manufacturer that makes the ubiquitous Clue board game tried to stop a small computer company, Clue Computing, from using the internet domain name *www.clue.com*. The court found that Clue Computing had a legitimate purpose for registering the domain name, and that although the name of the game “Clue” may be famous, this was not sufficient to enjoin all other uses of such a generic word under the FTDA—there must be some link in the mind of the consumer that would serve to dilute or tarnish the value of the famous mark. The court found that such a connection did not exist.

The trademark owner lost again in *HQM Ltd. & Hatfield Inc. v. Hatfield*. In that case, HQM had two registrations for

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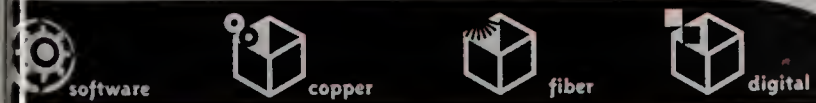
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Fine Print

Hatfield in connection with meat products. The defendant, whose surname was Hatfield, registered *hatfield.com* in 1995. Hatfield maintained no website at that address but received e-mail using the domain name. Despite HQM's allegations that the defendant was holding the domain name hostage, the court found that Hatfield was not a cybersquatter—noting that

It appears that the tide against well-known trademark owners in less-than-clear-cut cases has not yet turned.

the defendant had not registered more than one domain name, never sold a domain name and had no contact with or connection to the trademark holder. The court therefore rejected HQM's argument that dilution may occur because customers looking for its website might give up if they first found an unrelated or nonexistent website at Hatfield's domain name address. Without showing actual harm, the court stated, the plaintiff had no claim.

Toy Story Too

Do cases deciding against trademark owners portend a negative result for the Bronx Bombers? Not necessarily. (Note to self: See if anyone has registered *bronxbombers.com*.) But with the recent development in the Los Angeles Superior Court involving eToys.com, it appears that the tide against well-known trade-

mark owners in less-than-clear-cut cases has not yet turned. This time, however, the tide came from a different ocean. eToys, the leading online toy retailer, obtained a preliminary injunction against the much lesser known Etoy.com, which hosts an international art site. Although that marked an early victory for the rel-

atively well-known retailer, we'll never know whether such an injunction—preventing Etoy.com from operating its site—could have been sustained. Citing mass e-mail pressure from an internet-savvy public, eToys announced suddenly that it would drop the suit. Apparently, eToys was bombarded with mail urging it to back off and try to coexist.

Despite the surprising end twist, in the midst of this toy war—as Etoy called it—there were issues of the perceived

VOICE

DATA

VIDEO



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Information is

potential dominance of U.S. commercial law over foreign law, the battle between nonidentical domain names with legitimate preexisting uses and the traditional trademark priority analysis between arguably confusing and competing trademarks. It seems the two domain names had coexisted without incident until an irate consumer complained to eToys and vowed never to use the site again because of purportedly offensive language on the eToys site. The consumer had apparently gone to Etoy.com by mistake and saw the message, "We do not support the old-fashioned [HTML] way...get the f-----g Flash plug-in!" Lo and behold, shortly thereafter, eToys filed suit against Etoy for trademark infringement, dilution and unfair competition. (Side note: For what it's worth, Flash is pretty...cool.)

The facts made this a hard case because eToys has had a registered trademark in the United States since May 1997; Etoy filed for its U.S. trademark in June 1997 but asserts that it first used this name in 1994. To further complicate things, Etoy registered its domain name first—on Oct. 13, 1995; eToys registered its domain name on Nov. 3, 1997. Etoy claimed that eToys offered it over \$500,000 in cash and stock to purchase the Etoy URL. Etoy refused. Making matters more

difficult for eToys, Etoy is the brainchild of a group of performance artists with a social cause (just guess): challenging commercialism, power and control on the internet—not exactly one's first choice for a domain dispute sparring partner. However, eToys had a significant advantage in one important area—with a market capitalization of \$841 billion, it could certainly have outspent Etoy in a protracted and inevitably costly litigation. But after the voluntary dismissal, we can only guess how the court would have resolved the issue.

The complexity of this toy case, while perhaps extreme, demonstrates that in the shadows of anticybersquatting legislation exist endless uncertainties that will likely result in very costly domain name disputes for the foreseeable future. But the real story may be how this case got resolved as a direct result of the rising influence of internet culture on corporate behavior. How quickly and effectively such "virtual public opinion" is wielded, with a mere click of a button. **CIO**

Is legislation the solution? E-mail us about this and other legal topics at fineprint@cio.com. Andrew G. McCormick and Laura N. Mankin are attorneys in the eBusiness Group at Thacher Proffitt & Wood in New York City and can be reached at ebusiness@tpwlaw.com.

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Career Counsel

Mark Polansky Offers Advice to Aspiring CIOs and IT Managers

Executive Access

Q: I feel that I'm part of my company's key leadership. I've driven my organization up 250 percent over the past two years and maintained 40 percent margins based on implementing ideas and practices. I've reached a point where I do not feel I receive the level of executive mentoring I require to continue my growth and that I must find my own way without input or feedback. Although my business unit accounts for fully one-half of operating revenues, I'm shielded from direct mentoring by those whom I respect—the senior members of our company.

I do believe in my company and its direction, as well as my contributions to continued growth. However, I must find a way to work through and receive direct input from the CEO. Do you have any suggestions for not committing political suicide to gain access to a senior executive, when the person in the middle is your closest personal friend, and you don't want to impugn his position?

A: This is a tough call. I will assume you are currently heading up your company's IT function and that you are not reporting to the CEO or COO but rather to some other executive, perhaps a CFO, who is shielding you from direct contact with senior management. And it sounds like that CFO is good buddies with the top people. First, make sure that you are not



overestimating your own value and ability to serve as a member of the company's executive management team. Then, your best shot is to take the CFO aside, talk to him constructively about the strong trend toward the CIO position expanding to a true senior management role (refer to studies on the subject such as Korn/Ferry's "Changing Role of the Chief Information Officer" at www.cio.com/forums/executive/kornferry.html) and appeal to his sense of pride at having "discovered" you and the contribution that you could make to the enterprise (and its shareholder value if it's a public company). If that doesn't work, go to the CEO with the same message and be prepared to look for another job if he or she doesn't agree.

PROJECT ROLES

Q: I am confused by the terms *project director* and *project manager*, as used by management consulting firms and by pack-

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Career Counsel

aged software developers, such as SAP and J.D. Edwards, when they are referring to major software package implementations. It does not appear to be a matter of scope or size of the project; they seem to indicate quite different roles. Can you help with some role or position descriptions that will clarify this matter for me?

A: As they say, “A rose by any other name....” Most often, the choice of project director or project manager at a software company or consulting firm is arbitrary. Having said that, there certainly are some organizations where project directors have larger accountability in scope—but not in skills and tasks—than do project managers. And I know of a few places where multiple project managers report to project directors. The variability in responsibilities tends to be on the human resources management side, such as headcount planning and budgeting, career planning, professional development, performance reviews and salary administration.

Have a career question?

Visit our website at www.cio.com/forums/executive/counselor.html and pose your own questions to Mark Polansky.

STARTUP LURE

Q: I am a senior manager in one of the Big Five public accounting and management consulting firms. I am up for partnership this year. I have also received an offer from one of the most active e-business consulting firms for the position of managing director. The position has a good base salary and good options. Would you leave the Big Five for a smaller, publicly traded company, given that you have an 80 percent shot at making partner in a Big Five?

A: Yes, I would. But that’s not really the issue. The question is whether *you* would leave the Big Five for a small publicly traded e-commerce venture. How strong are the company’s business plan, management team, financial outlook and recent stock performance? And most important, what’s your risk tolerance, and where do you think you will be happier?

GOING PUBLIC (SECTOR)

Q: I am a CIO in a major local government institution. I am bored with government and would like to “escape” into the pri-

vate sector. I would also like to find a position that reports to a general manager or COO rather than to a CFO. I have state-of-the-art experience and skills and have worked in the private sector previously—even in startups. Unfortunately, the only interviews I’ve gotten are with other government institutions. How do I break through to the commercial sector again?

A: My first reaction is that you may be setting yourself up for disappointment and having your focus on returning to industry ignored. Returning to the profit-making sector is a big enough challenge, so be very careful about setting conditions on your next job—and how you express yourself about your “wills” and “won’ts.” Although you are correct that good CIO positions do not report to CFOs, the last thing a recruiter or search consultant wants to hear are conditions and will often assume that even a reasonable one, such as the one you stated, may be just the tip of the iceberg, especially if it comes with attitude. Concentrate on getting back to where you want to be and evaluate each opportunity—on its merits—as it comes.

STAYING PUT

Q: I manage the IT organization for a division of a \$4.5 billion corporation. I have responsibility for all IT activities except the WAN, and I oversee about 50 people. I have been with this company for 25 years but would like to pursue a greater challenge and a CIO position at another company. How do you recommend that I proceed? Should I just be satisfied where I am?

A: It sounds like you have already answered your own question in that you want more challenge than your current position offers, and you have expressed your distaste for “just being satisfied” where you are. But before giving up 25 years of seniority and reputation, talk with your superiors—both your division management as well as the corporate CIO. Is there a larger division that may need your services as the head of IT now or in the foreseeable future? Is there a role at the corporate level, including one on the staff of the corporate CIO, that would allow you to learn and do new things and expand your experience? If there isn’t a corporate CIO, why not, and why not you? If none of these avenues yield possibilities, then move forward and begin the process of résumé writing and contacting search consultants as described in other Q&As in this column. **CIO**

Mark Polansky is a managing director and member of the advanced technology practice in the New York City office of Korn/Ferry International. The web-based Executive Career Counselor column is edited by Web Research Editor Kathleen Kotwica. She can be reached at kkotwica@cio.com.



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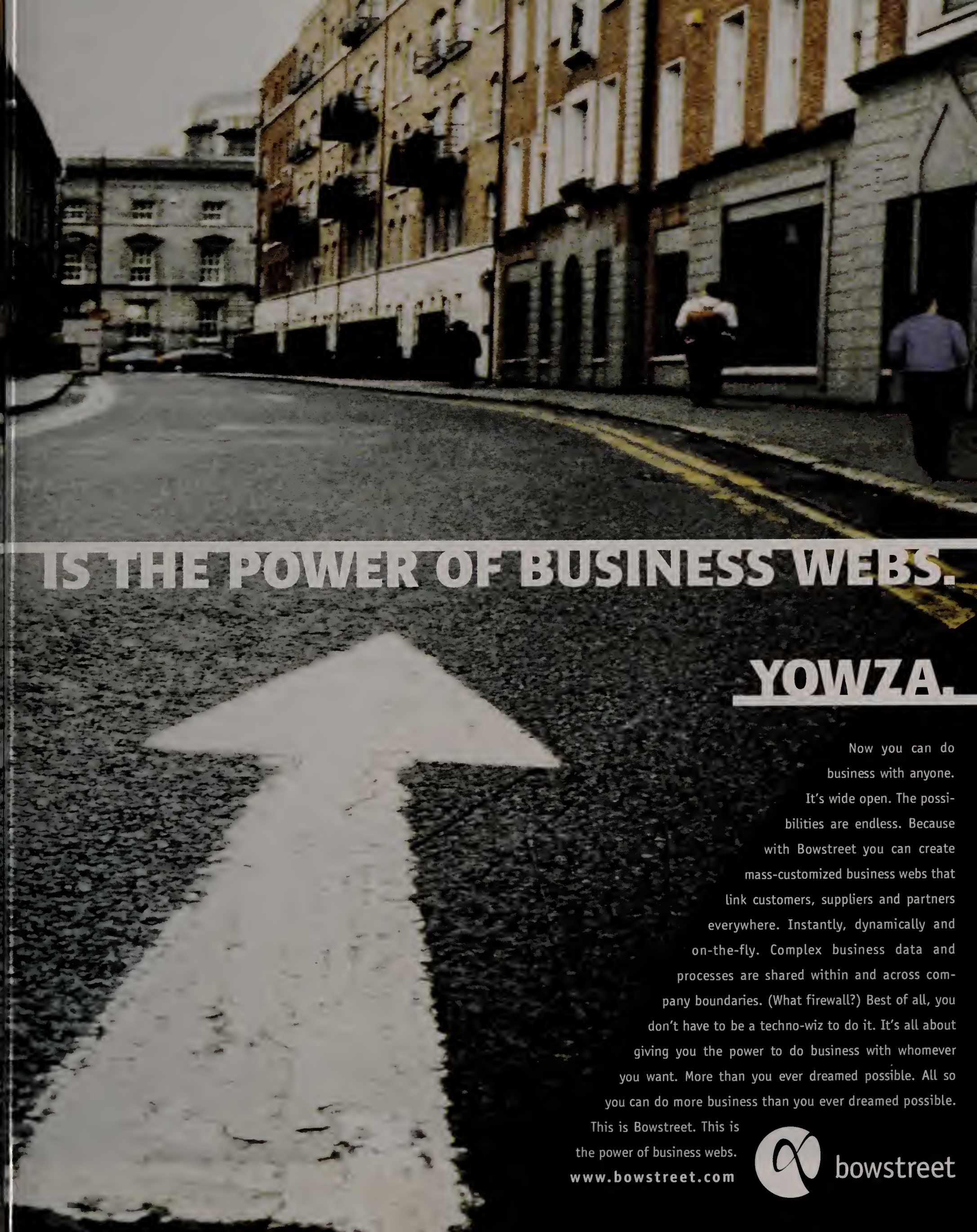
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BY DAINTRY DUFFY

It's 6 a.m. on the outskirts of Buffalo Grove, Ill., where the houses are a bit older and the lots a bit bigger. The sun rises slowly over the tree line, casting a warm glow on freshly tilled fields and a faded red farmhouse. A well-worn pickup idles by a porch, awaiting the dusty tread of heavy boots and the leisurely 10-minute drive into town.

At the local coffee shop on the corner of Lake Cook Road and Old McHenry, opinions on how Buffalo Grove's Little League champions will do against Deerfield this year are traded as heatedly as views on the upcoming presidential race. All the important news of the day is hashed out over crinkled newspapers, steaming coffee and that hearty mid-American breakfast staple...biscotti.

You see, Buffalo Grove is no longer the sleepy Midwestern farm community that used to provide Chicago with its cheese, milk and butter. The village has a Starbucks, a 14-screen IMAX theater and

Discover

- ▶ How the public sector is becoming more efficient by implementing private-sector strategies
- ▶ Ways to encourage knowledge sharing among reluctant business lines
- ▶ The growing uses for wireless technology in local government

upwards of 43,000 residents, many of whom work in the Windy City 35 miles away. The farms and the flat, open fields still exist, but increasingly they're being swallowed by upscale housing developments, where three- or four-car garages and satellite dishes are the rule rather than the exception.

Keeping pace with a burgeoning professional populace with ever expanding high-tech needs presented a challenge for the village government. Over the years the fire, police, public works and finance departments each invested in computers and software to meet specific needs, like handling payroll and billing and keeping track of fire inspections. However, by 1994, the village board of trustees realized that as the individual islands of information within each department grew, the village as a whole was falling behind in its ability to serve the residents.

For example, because the fire and public works departments maintained separate systems, there was no way for firefighters to know if the alarm they were responding to was in a building that had been cited for more than a dozen building code violations in the past year. The technology environment had become so disjointed that the only way Fire Chief Thomas Allenspach or Police Commander Steve Balinski could get access to Building Commissioner Edward Schar or Finance Director William Brimm's information was by sneakernet—walking over to their offices and asking Mary, Joanne or Bobby to print out a hard copy.

Determined to reverse this trend but unsure how to proceed, in 1994 the village board set aside \$750,000 for a new technology infrastructure and the following year hired Robert Giddens away from BSSi Innovations, a data integration services company, to spend it for them. In the past five years as Buffalo Grove's CIO, he has brought the village from laggard to leader with the use of cutting-edge technology and a private-sector approach to public-sector business.

Officer Michael Sheen accesses FBI data from the wireless laptop in his police cruiser as his colleague Marc Bucalo looks on.



by the Numbers Buffalo Grove

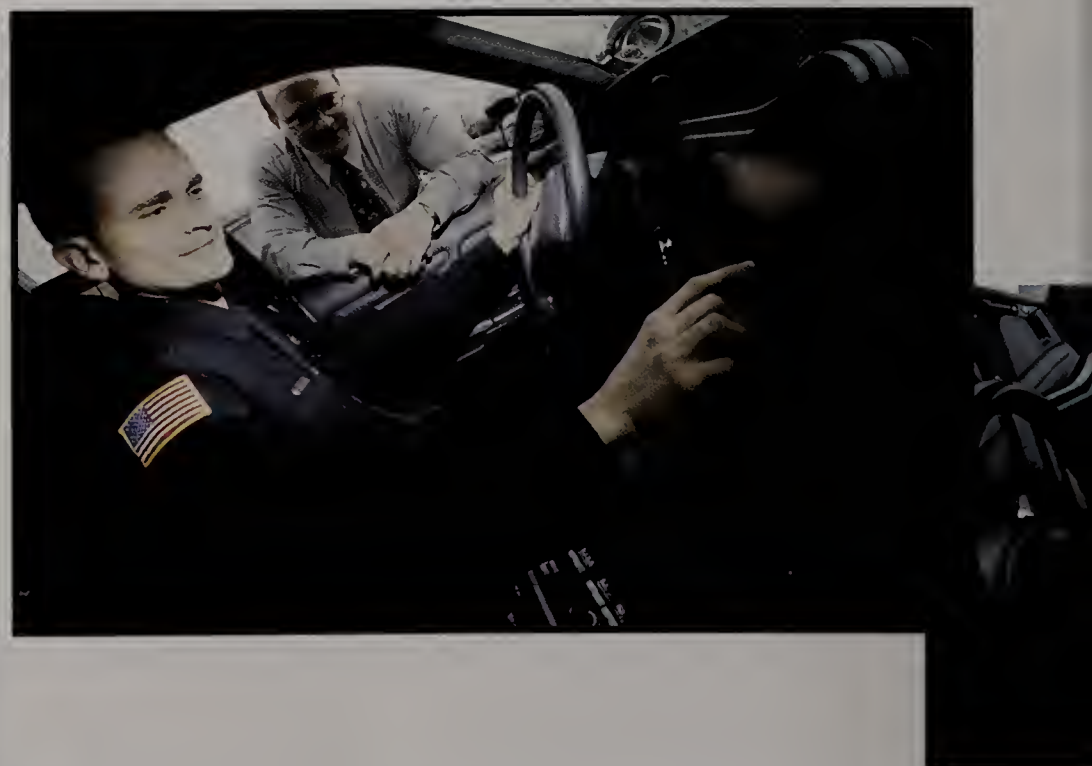
Population	43,250 (1999)
Land area	8.99 square miles
Median home value (single family detached):	\$230,000 (1998)
Median income	\$73,000 (1998)
Police	76 sworn personnel, 17 marked patrol cars
Fire protection	Three stations, 61 sworn personnel, 18 vehicles
Schools	Three high schools, four elementary school districts, two community colleges

It's 8 a.m., and a commuter, momentarily distracted by a cell phone conversation and the glare of the bright early morning sun, runs through a stop sign at St. Mary and Raupp Boulevard. To avoid the truck lumbering through the intersection, she swerves into a hapless oak at the edge of the road, severely mangling both the hood of her Ford Contour and the unfortunate tree.

Officer Michael Sheen arrives. After checking the plates and the driver's record and searching for outstanding warrants on the cruiser's notebook computer, Officer Sheen cites the driver for failing to stop at the

posted sign and fills out the incident report electronically. By traveling into one of the village's six receiver-equipped replication zones, the officer can transmit the report to the precinct and continue on patrol.

The wireless technology, a result of a \$75,000 grant by the State of Illinois, is the newest addition to Buffalo Grove's cadre of technology solutions. The Motorola laptops in the police vehicles contain two radio modems, one of which provides access to computer-aided dispatch (CAD) data, Illinois Criminal Justice Authority and FBI information, while the other contains village data stored in Buffalo Grove's Lotus Notes system. The Notes system contains over 450 distinct databases that can provide officers with contact information for building occupants, previous incidents at certain addresses, unpaid tickets and



PHOTOGRAPHY BY MARK SEGAL

even the number of times a home's garage door has been left open in the past month. The wireless system allows officers to perform routine tasks like filing reports from their vehicles so that they can maximize their street time (which is where the crime is) and minimize their station house time (where the only crime is the coffee).

Commander Balinski, a police veteran of 23 years, refers to Buffalo Grove's initial investment in technology as the "creation of the big cash cow," but acknowledges its effect on the quality of the community's police work. "It helped us get to a more professional level," he says. The additional benefit of the wireless project has been that it is projected to save Buffalo Grove \$40,000 to \$50,000 per year for the life of the project because the village will no longer have to pay the telephone company for a T1 line to transfer data to and from each building.

Officers can also use the information gleaned from Notes to solve crimes as well as write tickets. A mug shot application allows officers to assemble a virtual suspect lineup by searching for physical characteristics, age and sex. That information can now be retrieved 24/7, rather than only within the 9 to 5 schedule of the records office. The police department also uses Notes to track gang activity (such as it is, and it ain't much), route bulletins and paperwork through the department and assign investigators to cases.

The data that the police department has collected through its Notes database is also helping to produce a citizenry that is better informed about how to ensure its own safety. Many residents bookmark the police webpage, where daily bulletins on DUI arrests and neighborhood criminal activity, such as marijuana possession and petty theft, are posted.

Most Buffalo Grove residents are at their desks by **10 a.m.**, checking their e-mail and the internet for news and information. Civic-minded Buffalo Grovians subscribe to the Village News List (in its first two months the subscriber list went from zero

to 300) to receive e-mail updates on local events and the agendas of village board meetings. If you've been noticing an odd taste in your water, you'll know to attend this week's meeting where the third item on the agenda is water quality.

The village of Buffalo Grove is basically a \$40-million service corporation, says William Balling, Buffalo Grove's village man-



Commander Steve Balinski's police force uses Notes to help solve crimes as well as write tickets.

ager, who is appointed by the village president and board. As such, one of the board's primary concerns has to be keeping in touch with the needs of its stakeholders—the village residents. Technology has enabled the village to roll out a variety of new ways to communicate with its citizens, like the Village News List and a website that provides the opportunity to download documents such as building permits, zoning ordinances and dog license applications, which would previously have required a trip to the Village Hall to obtain. Channel 6 on the local cable network is a scrolling information tree that Giddens and his staff can update with information that has to get out to residents quickly, such as a report on a lost child or a water main break.

"Personally and professionally our citizens are working in a fairly sophisticated environment, and that places demands and expectations



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on us," says Balling. So far, Buffalo Grove has tried to strike an even balance between automation and the personal touch by electronically providing residents with information—such as forms and suggestions for how to complete a task—but then requiring them to come into the red brick Village Hall to complete the process. Someone who wants to apply for a building permit can download the application and fill it out at home, but then he still has to go to the Village Hall to pay the fee and sit down with a plan reviewer.

One of the issues worrying Balling and Giddens is that as Buffalo Grove continues to embrace technology as a way to communicate with its citizens, others may be left behind. (Giddens estimates that more than 50 percent of the village's citizens have home computers, and many more have access at work.) For example, Balling eventually wants to have a polling or feedback mechanism that would let residents voice their opinions on proposals via e-mail or through the website. "However, you have to be careful that you're not ignoring pockets of the population when you do this," he cautions.

A first step in the solution to this problem has been the Channel 6 cable station. With 75 percent cable penetration, the majority of residents are able to access the information on this network.

It's now noon, and an MIS analyst runs a report for public works on this morning's car accident. In Officer Sheen's report, the driver



After setting aside \$750,000 for new technology, Buffalo Grove hired CIO Robert Giddens to oversee the investment.

blamed the fender bender on a stop sign that was hard to see (and not the engrossing cell phone conversation). The same report also details the damage to the tree, and a public works crew is dispatched to the scene to administer first aid to the ailing oak.

The lack of knowledge sharing across the different village departments was the root of Buffalo Grove's initial problems, and the resolution has provided its greatest asset. When Giddens decided to go with Lotus Notes as a collaborative and messaging platform and use

a Unix-based program to run the core financial software, he was able to tie the disparate departments together. His first challenge was developing a standard central name and address book (CENA) that would be the foundation for all the community's information. While this may sound easy, years of working as separate entities had taken a toll on the quality of data within each department. In one set of records a resident might be called John Smith, in another Jonathan Smith and J. Smith in yet another.

After connecting all of the village's 250 full-time employees

Smart Business 1

Big Brother Is Watching

IN MOST COMPANIES, EMPLOYEES ARE LEFT TO speculate over whether their internet usage is being monitored. In Buffalo Grove, employees know that if they need to do internet research on a personal health- or finance-related issue, that activity is best left to their home PC.

CIO Robert Giddens has created a Lotus Notes database called "recommended sites to visit" that lists each

village employee's name and every website that he or she has visited in the past five days. The list serves two purposes. First, it enables an easy form of knowledge sharing by allowing employees to see the sites their coworkers find valuable. Second, it provides a not-too-subtle form of internet self-policing. Giddens has found that having a public list of employees' web travels keeps people scrupulously honest, while still allowing them access to all the information they need. The ease of administration and clarity of employee expectations have made the system a success. Big Brother is indeed watching, and he sits in the cubicle next door. —D. Duffy

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Public Sector

through the new Notes infrastructure, Giddens set about standardizing the information and creating a database that was searchable by name and address. The CENA enabled police officers, building inspectors, firefighters and finance officials to coordinate and share data on the same person and address. The result is that village employees now

Geographical Information Systems (GIS) have also become an important component of Buffalo Grove's information systems. CENA links to GIS, and by putting a square around each address the IT staff members can light up a map with any information they wish to see. The police department can create a map that identifies

"Personally and professionally our citizens are working in a fairly sophisticated environment, and that places demands and expectations on us."

WILLIAM BALLING, VILLAGE MANAGER, BUFFALO GROVE

spend about 80 percent of their computing time in Notes according to Giddens. In cases like this morning's accident, the public works department can run a report that shows the number of incidents at a specific intersection to determine if that stop sign really is so darn hard to see. Then they can move it. The Lotus databases also allow the village to easily track information for which few communities have the manpower. For example, Buffalo Grove's public works department keeps a database on every tree planted on public property. If there's an infestation of Asian longhorned beetles damaging Buffalo Grove's maple trees, the public works department can locate all the maples in the village and take precautionary measures.

Finance Director William Brimm sends his administrative assistant to village IT meetings to give her a voice in the proceedings.
"People get really pumped up when you get them involved."

bicycle thefts by neighborhood for the past six months to discern geographical patterns and trends.

A blue Honda has been parked on Weiland Road near Nancy's Pizza since 11 a.m. Now it's **2 p.m.**, and when Sergeant Steve Haisley logs the ticket on his laptop, Lotus Notes boots the tally of unpaid tickets for this license plate. Lynn Bethge, the supervisor in charge of police department records, notes that the driver has accumulated more than 10 unpaid tickets and places a hold on that driver's license. Next week, the car's owner will receive a notice in the mail advising him to pay up immediately, and the next time this vehicular miscreant is stopped by the police, he'll be asked to accompany the officer down to the police station where he can either pay up or call mom for a ride home. Crime doesn't pay. Not in Buffalo Grove.

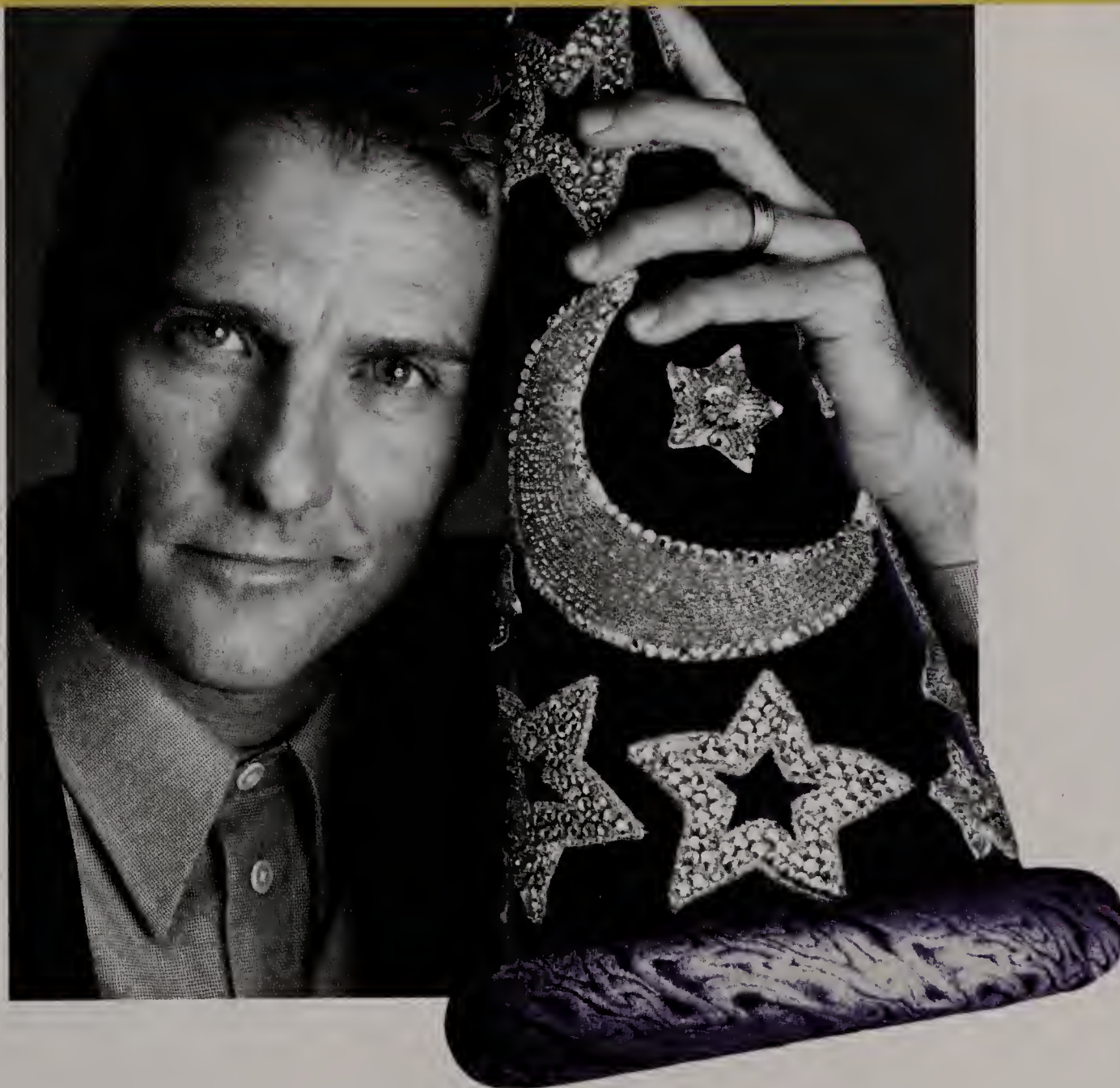
Collections is a serious issue for a local government. In its new system, Buffalo Grove has created the ultimate collection device. Among other types of billing, the system tracks building permit and licensing fees online so that within moments a village clerk can pull up all the various unpaid bills a resident has accumulated. All the billing used to be done by hand, and the only way to track who had paid their bills and fines was to search through the paperwork.

Utility billing was the first system Giddens converted into the new Unix environment, and the result has been that much of the bill printing and envelope opening has been outsourced to Third Millennium Associates, a Chicago-based business transaction company. Through the use of a lockbox, Buffalo Grove receives a disk that shows who has paid their bills, and that information is uploaded onto the system. The village is now able to enforce a rule that stipulates



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Public Sector

a resident can't sell his or her property until all outstanding bills have been settled. Like many communities, Buffalo Grove imposes a real estate transfer tax that must be paid before the property can change hands. "If you want to sell off your real estate, you'll pay your bills,"

involved," explains Brimm. "You can bring in a police officer, a clerk or a firefighter who thinks that nobody cares about their opinion and make them part of the process rather than part of the problem." Of course, Giddens is responsible for keeping the village board happy as

"It was a smart position to be put in. It makes sense that if you buy, you have to be able to replace."

ROBERT GIDDENS, CIO, BUFFALO GROVE

says Andrew Lauter, president of Precision Systems Concepts, a Schaumburg, Ill.-based systems integrator that helps Buffalo Grove with the development and support of Lotus Notes.

It's 4 p.m., the shadows are lengthening, and down at Village Hall the village IT committee is commencing its bimonthly meeting. Sitting around the table are a smorgasbord of Buffalo Grove characters, among them Joe Bridges, the pro at the Buffalo Grove Golf Club, Tim Sashko, a deputy chief and 21-year veteran of the fire department, and Bobby Freed, an administrative assistant to the finance director and a grandmother of three. There's a lot to discuss.

Back in 1995, Giddens knew that the technology transformation he was about to begin would be a tough sell for many long-time employees because it would irrevocably change the way they thought about their jobs and the tenor of their long-standing relationships. The police and fire departments, for example, had historically resisted attempts to pool information because of their concern with making sensitive information more widely available. So representatives from the fire, police and public works departments were asked to join the IT committee in order to find out firsthand what Giddens was planning and then act as evangelists and educators for their departments. In fact, in order to involve as many people as possible, Bill Brimm doesn't attend the committee meetings personally and instead sends Freed.

"People get really pumped up when you get them

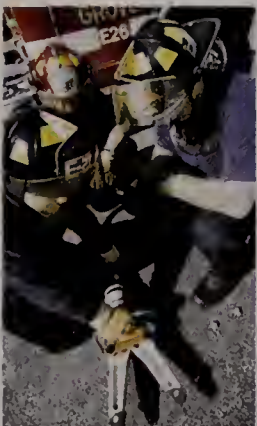
well, and making smart use of the money it budgets for him has been an ongoing goal. One achievement has been the money that Giddens has saved Buffalo Grove on its internet connection. The school system pays \$24,000 a year for its T1 internet connection. AT&T Cable Services wired the village and park district to the school's connection, saving the village \$48,000 a year (more than \$190,000 to date). Buffalo Grove also takes advantage of a clause in its cable contract that allows the use of copper cable in the ground to connect public buildings and create a free institutional network. The village has expanded this to include the park district and schools. As a result, it no longer has to pay recurring monthly ISP charges for a T1 (1.2 megs), and instead it has access to a 4-meg system that is much faster, more reliable and maintained and supported by AT&T Cable Services.

One stipulation the board placed on the IT department early on is that if it was going to invest in technology, it would need to have the means to support that technology long term. As soon as IT buys a new piece of hardware or software, it is required to set up a reserve account and start putting money aside to fund the eventual replacement of the new technology. "It was a smart position to be put in," says Giddens, and "it makes sense that if you buy, you have to be able to replace."

While \$750,000—the village's initial investment in 1995—may sound like a big chunk of change, Giddens and Brimm insist that



Fire Chief Thomas Allenspach (standing with Deputy Fire Chief Tim Sashko and Secretary Kathryn Abangan) runs a safer operation now that firefighters can access more information about burning buildings on their way to the scene.





for a community the size of Buffalo Grove it's quite reasonable, and they feel the benefits the village is realizing from the continuing investment far outweigh the cost. For fiscal year 2000 the IT budget (including the reserve account) is \$423,000, a per capita expenditure of \$9.82. With a grin, Brimm notes, "I've got to believe that we're generating more than \$10 in efficiency per person with everything we're doing."

Clang! Clang! The alarm goes off shortly after sunset. It's **6 p.m.**, and there's a fire reported at the Arbor Creek Business Center on Asbury Drive. With calm dispatch, the firefighters hustle from the training room, where they were receiving a refresher course on CPR, through the locker room, where they gather gear, and into the trucks. On the way to the blaze, the firefighters use laptops in the vehicles to access detailed floor plans of the building as well as the location of any hazardous materials or previous fire code violations.

When an emergency call comes in over the loudspeaker, the firefighters' first duty is still to get themselves in the truck and on their way as quickly as possible. Technology hasn't affected that part of the process. However, en route to the scene, Buffalo Grove firefighters can now access a great deal more information about the situation they are about to encounter than ever before. By using laptops equipped with the same wireless technology as the police cruisers, firefighters can pull up a map of the building and its contents for any of the village's industrial and multifamily buildings (these are available for single residences but are not kept up-to-date) and view the location of hydrants, electrical and alarm panels, gas and water shutoffs and any important documents that will need to be saved. Within the next year the department will also have the technology to access information about surrounding buildings so that the firefighters will know when they arrive on the scene whether extra precautions will be needed because of that chemical plant next door. They can also look at the address's history to see police reports on suspected arson or if there are people in the building with special needs. All this used to be stored in three-ring binders that were kept in the fire trucks. Now they can be updated more often and accessed more easily.

Much of the technology innovation for the fire department has been administrative as well. Kathryn Abangan is the department's secretary and a long-term resident of Buffalo Grove. After 20 years



Smart Business 2

Joining the Software Biz

FORMING STRONG VENDOR relationships has been fundamental to Buffalo Grove's success, according to CIO Robert Giddens. However, he certainly never expected the community's accomplishments to create a whole new

line of business. The power and flexibility of some of the applications the village has developed, such as the vehicle sticker application (which tracks the purchase and renewal of the required community identification stickers), impressed Chicago business transaction company Third Millennium Associates. It offered to form a partnership with the village to develop and sell the software to other communities, and Giddens agreed. After all, he notes, "If it works for us, it would certainly work for others."

Buffalo Grove has developed the software, and the vendor takes responsibility for the marketing, sales and support. In fact, three other Illinois communities—Blue Island, Hillside and Elmhurst—are already using the application and two more are expected to sign on. So far, the new venture has only netted the village \$2,250, but Giddens believes that the demand will grow and that the project serves a worthy end. "If there are ways we can decrease the tax load on our residents while still providing high quality service," he says, "we'll take advantage of that." —D. Duffy

of acting as den-mother to more than 60 firefighters, she has developed a strategic view of how technology has affected the day-to-day workings of her department. "If you're doing a lot of mutual aid calls in another area," says Abangan by way of explanation, "it may prove to the powers-that-be that another ambulance or fire truck is needed."

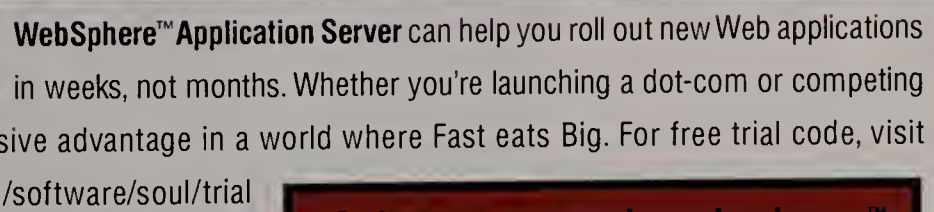
The lights in the rambling Village Hall have gone out for the night. It's only **8 p.m.**, but Buffalo Grove goes to bed early.

Officer Sheen's shift has ended, and his reports have been filed and approved, bearing testament to another successful day of thwarting the village scofflaws. Fire Chief Allenspach and his men kick back in their Laz-E-Boys at the firehouse, and over the quiet murmur of the TV they discuss the day's events and keep an ear out for the next alarm. Giddens' day is winding down at his home in Buffalo Grove. He doesn't have to live in town to do his job, but he does because he wants his children to grow up in a safe, well-run, friendly town where he has an impact on the community. The strength of Buffalo Grove's IT-enabled village is that "its people solve problems for themselves," says Giddens. And that's a classic American virtue. **CIO**

Senior Writer Daintry Duffy has yet to visit her town hall to register her dog, Lucy. She can be reached at dduffy@cio.com.



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CHAIN OF TOOLS

Garden.com founders
(from left) Jamie O'Neill,
Lisa and Cliff Sharples,
and Andy Martin use
proprietary software to
link their growers.

Stand (Pick) and Deliver

The less-than-sexy truth about e-tailers is that the heart of their business lies not in splashy websites or offbeat ad campaigns but in plain, old-fashioned order fulfillment

BY CONSTANTINE VON HOFFMAN

It ain't rocket science: The faster and more accurately a company can fill an order, the more likely it is to satisfy the customer and keep him or her coming back for more.

Two online companies—Toysmart.com and Garden.com—face similar fulfillment challenges. But with dissimilar products and supply chains, they deal with those challenges differently. Toysmart.com has less than a month—from Thanksgiving until just before Christmas—to receive, process and ship more than 95 percent of its annual orders from its warehouse. Garden.com, on the other hand, has several peak selling and shipping times throughout the year, but the majority of products offered on its site—ranging from plants to fish to topiary elephants—are processed and shipped by more than 70 suppliers across the nation.

This story looks at how these two companies fill an order, from the customer's initial click of the "send" button to the package's arrival at the customer's doorstep.

Learn

- ▶ How Toysmart.com fulfills orders through its central warehouse
- ▶ How Garden.com delivers the goods by tying together over 70 growers nationwide

PHOTO BY WYATT MCSPADEN



WAREHOUSE WIZARD Wayne Teres, Toysmart's director of logistics, created an order fulfillment system that could handle the flood of holiday orders.

Toysmart.com

Nelson Orders Toys

At 1:10 a.m. on Dec. 1, 1999, Pat Nelson, who hates malls, was on the phone trying to reach an actual person at KBKids.com. Her frustration had boiled over because, despite repeated tries, Nelson couldn't get the link from the website to the secure server to work, meaning she couldn't place her order. While listening to a seemingly endless Muzak loop, she decided to see if she could get better service elsewhere. Nelson doesn't remember why she ended up at Toysmart.com: "A TV ad maybe?" Nelson, a technical writer in New Hampshire, liked what she saw at the site. She ordered a Where the Wild Things Are Puzzle Maze Game (\$15.99) and a Boggle Junior Game (\$9.99) for a niece.

Because of a \$10 promotional discount and free shipping (like many dotcoms, Toysmart is not yet in the position of having to turn a profit, so it can eat the cost of things that a brick-and-mortar cannot), the total was \$15.98. She says the discount was so seamlessly applied to her order that she didn't realize she was getting it until she checked out. A short while later she received an order confirmation, along with a confirmation number, by e-mail.

This was a Christmas order for Toysmart, which did more online business in the first 30 hours of December 1999 than it did in all of December 1998, before the company transformed itself from Holt Educational Outlet—a catalog company that sold mostly to teachers and day care professionals—to an online company aimed at selling creative and nonviolent toys to the general public. Toysmart's best week for sales was Dec. 4 through 11. While the company will not say how much revenue it took in, Patrick Rafter, director of public relations, says the site had 500,000 visitors that week.

The Warehouse Opens

From Toysmart's host servers, located at its headquarters in Waltham, Mass., Nelson's order was routed to the company's warehouse/order fulfillment center 36 miles away in Worcester, Mass. Toysmart's warehouse takes up one-quarter of a 600,000-square-foot facility that used to house a U.S. Steel plant. Giant vestiges from its steel processing days remain, including an enormous over-

head crane with a hook the size of a ship's anchor. Toysmart's warehouse operation opened in August of last year. Wayne Teres, the company's director of logistics, spearheaded its design and construction. Teres, who had previously designed facilities for high-end merchandisers like Sharper Image and Robert Redford's Sundance furnishings catalog, had a tall order: He had just 70 days to move the company into the space and have the staff ready to take its first orders.

Maximum Efficiency

In those 70 days, Teres oversaw the creation of a system to track the million inventory items in 75,000 different categories, from the moment they reach the warehouse to the moment they're shipped; the installation of enough shelving to hold the toys; a system that allows items to be found quickly and easily; and a veritable interstate high-

way of conveyor belts to carry toys from the person who checks that the order is correct, to the person who packs them up, to the FedEx employee who ships them out.

When a tractor-trailer carrying a load of Harry Potter books, Thomas the Tank Engine train sets and pipe cleaner weaving looms pulls up at one of the loading bays, workers check each shipment to see if it's correct, then use Toysmart's warehouse management software to create bar-code labels to track and "license plate" each product. These labels contain the product's name, its SKU number (assigned by Toysmart) and its UPC number (assigned by the manufacturer).

The product then moves into the picking area. This consists of enormous shelves that reach halfway up the warehouse's two-story-high ceilings. In the ceilings are rows and rows of skylights, which Teres loves: "I get fatigued when I go into most warehouses, but it's unbelievable here. You feel like you're working bathed in sunlight."

Designing a picking area is a science in and of itself. The goal is to maximize the efficiency of the order-fulfillment process by figuring out what arrangement will enable the pickers to find things as quickly and easily as possible. Teres has designed the picking area to be like a U-shaped racetrack, with the highest-demand products closest to the track going around aisles of shelves. But for all its utility, the pick-

How the Grinch Stole Online Christmas

It was not a happy Christmas for many folks attempting to play virtual Santa Claus. Last Dec. 4, Jennifer Teig went to KBKids.com to order a Teddy Roosevelt G.I. Joe for her husband, a T.R. aficionado. On Dec. 23, she was informed it was back ordered. On Jan. 11, Teig called the company to try to find out what had happened to the toy soldier, only to be told that orders not filled after two weeks on back order were canceled. She was then promised a \$20 gift certificate for her troubles. Two months after her order, the certificate had yet to arrive.

She was hardly alone with her problems. In January, a disgruntled customer filed a class action suit against Toysrus.com, alleging the company accepted Christmas orders despite knowing it wouldn't be able to fill them. In addition to fulfillment problems—which bedeviled online retailers as well—the cyber-Christmas was also thwarted by purely electronic snafus. Andersen Consulting reported that fully one in four cyber-purchases failed either because the sites could not take orders, crashed in the process or were otherwise inaccessible.

With the clock already ticking toward the 2000 holiday season, e-tailers are hoping to avoid repeating last year's glitches. And lawsuits. —C. von Hoffman

with merchandise as he or she goes. The cart is about six-and-a-half feet high and divided into 12 separate bins, each of which holds all the items in an individual order.

"At the height of the 1999 Christmas season, the orders came out nonstop," says Joyce Pelletier, a picker at Toysmart. Pelletier was an order picker at another company before coming to Toysmart last September. That experience makes her one of the senior people working the floor. At the beginning of 1999, the company had only



ing area is also a wonderland of toys, says Teres. "It's very hard to walk down an aisle without touching or feeling something."

Pickin' and Grinnin'

Nelson's order for the Wild Things and Boggle Junior games is bundled with a wave of 499 other orders and printed on picking manifests at one of several printers near the picking area. Items on the manifest are listed in an order that gives pickers a fixed route through the warehouse. The manifest is then assigned to a picker who wheels an enormous tubular metal cart through the picking area, filling it

28 full-time employees. When the year ended, it had 210 full-time employees in the headquarters and the warehouse, and 300 seasonal ones in the warehouse. Because of her experience and ability to solve problems, Pelletier is what's known as an "exception picker," someone who can find exceptions—items that others can't find. Having one person find whatever items are missing—usually because a bin is empty, an item is misstocked or it's too high, and a cherry picker is needed to reach it—means that pickers don't have to hold up the other 11 orders on their cart while waiting for one or two items.

When Nelson's order is complete, it's scanned and confirmed,

then rescanned and rechecked as a packer puts the items into a cardboard shipping box (bearing a bar code unique to her order). Had Nelson ordered gift wrap for her packages, the box would have been routed to one of the 20 gift-wrapping tables. The company offers three different kinds of (non-denominational) holiday paper and one type of wrap specifically for baby shower gifts.

One Happy Niece

Nelson's order is then sent by conveyor belt to a station where another packer adds recycled paper packing materials and seals the box before sending it on a conveyor belt to the FedEx station in the warehouse. During the holiday rush, FedEx had five full-time employees in the warehouse just to handle the volume of business coming from Toysmart. They enter each package into the FedEx shipping system, which assigns a tracking number to each package before it is placed on a FedEx truck.

Nelson's order shipped before 5 p.m. from the Worcester warehouse on Dec. 1, approximately 17 hours after Nelson clicked "send." When the order was shipped, Toysmart sent Nelson an e-mail with her tracking number, allowing her to know exactly where her order was until the moment it was delivered to her house. The order arrived at Nelson's house in New Hampshire two days later, at 10:29 a.m. Nelson then personally delivered the gifts to her 5-year-old niece.

Garden.com

You Do Bring Me Flowers

Yvonne Schueller wanted flowers for her husband. Not a bouquet, but living, growing, keep-'em-alive-if-you-can-type flowers, specifically daffodils, tulips and paperwhites. So as a busy Los Angeles legal secretary with little time to hoof it to a flower shop, on Dec. 14, 1999, at 12:21 p.m., she went to the Garden.com website and ordered them.

Garden.com doesn't grow its own products. While the company does have a test garden in West Des Moines, Iowa, it doesn't sell anything from there. And the warehouse operation at its Austin, Texas, corporate headquarters mostly handles garden-theme items,

such as rake-shaped earrings, scented hand lotions and the like. What makes the company successful is its ability to link to more than 70 suppliers of seeds, plants, tools, shrubs and even snails around the country through its proprietary software.

So even though Schueller's order is initially handled by Garden.com's servers in Texas, it is swiftly routed to the appropriate suppliers: The daffodil and tulip orders go to McClure and Zimmerman in Friesland, Wis., and the paperwhite order goes to W.R. Vandershoot in Chesapeake, Va.

A Fertile Opportunity

One of the things that attracted Garden.com's founders—Cliff and Lisa Sharples, Jamie O'Neill and Andy Martin—to the gardening business was that they wouldn't have to train suppliers and customers in a new way of doing business. Unlike, for example, selling books, where many people consider browsing the shelves of a bookstore an essential part of the purchasing process, gardening companies have long operated as catalog businesses. Buyers are used to ordering without having to see the actual plant, and suppliers already have systems in place to process and ship orders.

When Garden.com's quartet of founders began tossing around the idea of starting an online company, they knew little about gardening—they were not green thumbs but business school graduates with backgrounds in IT. Lisa Sharples, a home crafter, threw out the idea of selling beads online. After rejecting that idea, they considered selling seeds, which eventually led them to consider gardening. "The gardening industry is absolutely massive," says CEO Cliff Sharples of the \$47-billion-a-year industry. "But it's so highly fragmented that nobody perceives it as being a big industry."

After some research, they found out that gardening had no dominant national retailers, meaning the company wouldn't have to go head-to-head with an established brick-and-mortar competitor. In 1996, they scooped up the URL Garden.com for a paltry \$2,500.

"When we started looking into the gardening industry we said, 'Wow, here's an industry with thousands and thousands of local growers of great products all around the country and no way to get that product efficiently and effectively out to a national audience,'" says Cliff Sharples. "The only way to do it is to electronically tie together the inventories of these farms and growing fields."



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The Perishable Problem

Long before Schueller could place her order, someone had to plant and grow the flowers until they were hardy enough to be shipped. Unlike manufactured products, which can be kept on hand indefinitely and consume only shelf space, plants have a limited shelf life and consume resources—water, electricity and the labor to tend them.

At Milaeger Gardens in Racine, Wis., which supplies perennials to Garden.com, the flora are grown in 85 greenhouses spread over three acres. Plants are grouped according to their growing needs, for exam-

either increase or drop off suddenly. If they increase, the farms will try to grow more plants for later sales.

In order to have this virtual supply chain work, Garden.com has built from scratch a software system that routes orders to appropriate suppliers and tracks what products those suppliers have on hand and how much they cost. The system also plans for future inventory. The company uses that information to keep the website current.

Another key reason Garden.com built its own system was that off-the-shelf software it looked at couldn't update customer order



ple, those needing the same temperature or similar amount of light.

One of the trickier aspects of working with perishables is that they are so, well, perishable. A crop of plants, even ones grown in carefully controlled environments like greenhouses, can die suddenly for any number of reasons—diseases, insects or watering problems, to name just a few. “Occasionally something dies en masse, like a whole variety,” says Kevin Milaeger, whose family has been running Milaeger Gardens since 1960. “The availability can change almost overnight sometimes.” When that happens, Garden.com has to be notified immediately, both so that it can tell customers who have ordered those plants and so that it can update its website.

Pulling Orders

The suppliers receive the orders in batches through an extranet created and run by Garden.com, print the orders and then give them to order pullers to fill. The orders are arranged so that pullers pushing large carts can get them done as quickly as possible. While Milaeger Gardens has about 1,000 varieties of plants, the bulk of the orders are for just a few of those varieties. So as much as possible, all the big sellers like day lilies, hostas and clematis are stored together.

Not surprising, the work is very seasonal—this is, after all, the industry that invented the whole seasonal idea. Milaeger says that during the peak weeks in March and April he splits his 25-person crew into two and sometimes three shifts to keep up with all the orders.

Unlike inanimate products, plants are frequently ordered months before they are ready or wanted. “You might not want the plant for three or four months, so you order today and you get it some months down the road,” says Milaeger. During the time when that variety of plant is growing, the suppliers keep track of orders to see if they

information in real-time. Now Garden.com and the customer can find out the status of an order anytime, day or night.

Scan and Ship

Plants do not take kindly to conveyor belts and other assembly line mechanisms, so at Milaeger the person who pulls an order is also responsible for packing it and labeling it for shipping. Once the order has been labeled for shipping (but before the box is sealed), it goes into a greenhouse holding area, and the order pullers will check the contents again. It is here, says Milaeger, that computer technology has made his business a lot easier. “Each item is bar coded, so [order fillers] don't have to read all these fancy botanical names that are in Latin,” he says. “What used to happen is that there'd be this 15-letter Latin word and maybe someone misplaced one of the letters, and then it wouldn't match with the invoice.” In short, order fillers don't have to know the difference between *Pelargonium denticulatum* (pungent peppermint geranium) and *Pelargonium crispum* (Prince Ruppert variegated geraniums) or *Rheum rhabarbarum* (rhubarb) and *Armoracia rusticana* (horseradish). Now, they just scan the bar code that's on the front of each pot, place the shipping label on the box and send it on its way.

Which is exactly what happened with Schueller's daffodils, tulips and paperwhites, which she received on Dec. 17, two days after she placed her order. The bulbs made their way back into the ground shortly after that. **CIO**

Do you have any good, bad or ugly order fulfillment stories? Senior Editor Todd Datz wants to know at tdatz@cio.com. Constantine von Hoffman is a Boston-based freelance writer.



10:15 am

Today's Forecast: Showers



10:17 am

Brainstorm



10:19 am

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Elizabeth Echols, 39

Executive director of the White House
Electronic Commerce Working Group

Background and education

Received JD degree from Stanford
Law School, BA from Yale University

Prior to joining the Clinton administration, Echols worked with the investment banking firm of Morgan Stanley & Co. and at the Washington law firm of Steptoe & Johnson; prior to her current appointment, she served as senior adviser to Commerce Secretary William Daley on such issues as telecommunications and information technology

e-business and privacy for all?

BY MINDY BLODGETT

Government e-czar Elizabeth Echols faces the task of encouraging unrestricted internet business growth while safeguarding public interest

Elizabeth Echols, 39, stands astride a virtual divide. On one side, consumer and privacy advocates cry out for increased fraud and privacy protection through stricter internet regulations. On the other, corporations resist any internet regulation or taxation that could derail chances of fully exploiting e-commerce. Echols, dubbed the country's e-com-

merce czar, is charged with somehow making both sides happy.

It's not a small task. Since e-commerce exploded onto the business and political landscape just a few short years ago, the Clinton administration has seesawed in its approach to internet control. Early regulatory attempts were a tad heavy-handed, as characterized by the Clinton administration's 1993 failed Clipper Chip initiative, which would have allowed the government to obtain judicial consent to break almost any message by requiring that all encoding include a "back door," or skeleton key, allowing government access. This evolved into today's more laissez-faire stance, which allows private industry to lead both e-commerce development and consumer safeguards against internet fraud. For example, the administration's Electronic Bill of Rights for Privacy in the Information Age calls for websites to *voluntarily* give internet customers the right to choose whether personal data is shared and to dictate how and when it is disclosed. (The bill would also give consumers the right to view the data gathered and to correct wrong information.) Of course, by trying to please everybody, nobody ends up happy: The White House has been criticized both by privacy groups for taking a far too hands-off approach and by Silicon Valley potentates for meddling too much.

The Clinton administration first appointed an e-czar six years ago, when Ira Magaziner was named to the post. Magaziner's initial efforts to fight internet consumer fraud and the digital divide while simultaneously encouraging e-business expansion evolved into today's White House Electronic Commerce Working Group. Echols, a lawyer who specialized in international trade issues and telecommunications as well as a former investment banker, became the

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- ▶ Government plans to bridge the digital divide
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group's first executive director in August.

We talked to Echols about the complexities she faces in her new role as well as her thoughts on some of the issues the group is currently grappling with.

CIO: Could you give us a thumbnail sketch of the main issues the Working Group is examining right now?

Echols: It's really a range of e-commerce issues, including infrastructure, [web] content and promoting a global approach to these issues. This year, we will also go beyond the commercial aspects of e-commerce and try to focus on ways that information technology can be used to really better the lives of all people. For example, in December, Vice President Gore announced two initiatives. One aims to improve the use of IT in government, and the other concentrates on the electronic society [using IT to improve access to education]. These projects, along with the initiative [to combat the digital divide] that the president announced in the middle of

December, will be a big part of what the group does this year. Really, all of these initiatives are designed to bring the benefits of information technology to more people.

Can you explain how these initiatives will be implemented? What is the role of the Working Group?

In each initiative, the president charged various cabinet secretaries with responsibility for implementing the parts of the initiative within their jurisdiction. The Working Group will play a coordinating role and work closely with each federal agency on implementing these initiatives. For instance, the president asked the secretary of education to work with states on removing legal and regulatory barriers to distance learning. Similarly, the president directed the secretary of health and human services to examine ways that technology can be used to deliver health care to underserved areas.

In the e-gov initiative, one way to make government more accessible to people is through a government portal. We are looking at creating a one-stop point of entry for government information. For instance, if you needed a new passport, eventually you could just type *passport* and go directly to the right page on the state department website, cutting through a lot of red tape. Another piece of the e-gov initiative is that the president has asked the National Science Foundation to conduct a one-year study on electronic voting. There are a lot of issues that need to be addressed with regard to e-voting, such as privacy, authentication and access.

There are many privacy proponents who think the e-commerce community isn't doing enough to regulate itself. Do you think the government will step in and do more in the way of regulation?

I think there are two separate issues here. First of all, there are certain areas of privacy where the administration has supported expanded legal protection. For example, medical records and children's privacy issues are particularly sensitive, and we have

consequently expanded legal protection. In terms of what the industry should be doing, there's clearly a lot of work still to be done. But we are encouraged by efforts to self-regulate, as evidenced by the increasing number of websites that are posting their privacy policies, and we do believe that is the most effective way. Obviously, government and private industry all have an interest in protecting the consumer. Consumers are becoming much more concerned about information that is being collected about them on the web. And if the industry doesn't take action to self-regulate, people will not use the web and e-commerce to the extent that we currently expect they will, and ultimately both consumers and e-tailers will lose out.

Europeans have much stricter privacy rules regarding the web than the United States.

How is the Working Group addressing that?

[In February] negotiators from the European Commission and the United States reached a tentative agreement on the creation of a "safe harbor." The safe harbor agreement bridges the differences between the EU's and the United States' approaches to privacy protection and ensures adequate privacy protection for EU citizens' personal information. Working with the EU, the Department of Commerce developed the concept of the safe harbor, under which U.S. companies would have the choice to voluntarily participate in the safe harbor by self-certifying to the Department of Commerce. In self-certifying, companies agree to adhere to the seven privacy principles of the safe harbor, including elements such as choice, notice and enforcement. Through this process, U.S. companies can qualify for the safe harbor and thereby continue to receive transfers of personal data from citizens in the EU.

[Ed. note: On March 15, European and U.S. negotiators finalized the agreement on the "safe harbor" principles described above.]

What is the Working Group doing to address global e-commerce issues?

Obviously, given the global nature of the

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internet and e-commerce, it is critical that countries around the world adopt policies that will encourage rather than hinder the growth of the internet. At the heart of this issue for us is creating a universal approach to national and international internet policies that stresses private-sector leadership and a minimalist government role. Since President Clinton and Vice President Gore first announced this policy in July 1997, many countries around the world have adopted a similar approach. We have signed agreements with eight individual countries as well as with the EU.

More specifically, in May 1998, the Clinton administration won agreement from the World Trade Organization [WTO] member governments to refrain from imposing customs duties on electronic

Because this medium moves so quickly, there is no way that government can watch everything going on on the internet; the reach is just too great. That is why self-regulation is so important—we need internet vendors to post meaningful privacy policies, that sort of thing. But that's not to say that we are just throwing up our hands either, because we will continue to aggressively enforce already existing consumer protection laws. I think the question is, How does the internet differ from the land-based world, and what additional work needs to be done to make sure consumers get the same protections online as they do offline?

Both the land-based world and the internet world have crimes, for example. But the real challenge is finding the resources to keep up with the reach and

fiscal year 2000. President Clinton hopes to triple this amount again to \$100 million in his fiscal year 2001 budget. The number of classrooms actually connected to the internet has increased from 3 percent in '94 to 51 percent in '98. We are also looking at other ways to promote internet access. [As part of his new budget proposals, the president called for \$2 billion in tax incentives for private businesses to encourage technology training for workers and \$380 million to serve as catalysts for public and private partnerships for IT training, \$10 million of which is proposed to help prepare Native Americans for IT careers.] Finding specific, concrete ways to promote internet access to traditionally underserved areas will remain an important part of our agenda.

What is the final goal of the Working Group?

We want to continue to see e-commerce and the internet grow and flourish in ways that protect the public interest and provide benefits to all people. That's a huge mandate, and there are a lot of different ways to approach the goal. Clearly, we want to increase individual access to the internet, address some of the digital divide issues and make sure people have the web access necessary to participate in the new information economy. We also need to make sure that those consumers who are shopping online receive the same protection online as they do at the shopping mall.

But I don't see balancing consumer protection and privacy concerns and the growth of e-business as an either/or proposition. If people don't get what they pay for or have come to expect from the web—they order something online and then get a substitute item without being notified, that sort of thing—then they will become disenchanted, and there won't be the tremendous growth that we've seen so far. So it's to all our benefits to make the internet easily accessible and safe. **CIO**

Senior Writer Mindy Blodgett often thinks about her online privacy, do you? Write to her at mbloджетт@cio.com.



transmissions. At the last WTO meeting in Seattle, we made substantial progress in negotiations in this area on a common, multinational approach to customs duties. We are trying to extend the moratorium with the view of making it permanent.

How would you answer criticisms that Clinton's administration has been too cautious on regulating e-commerce issues?

speed of the internet and adequately enforce existing laws.

What specific proposals has the administration made to bridge the digital divide?

Well, actually, the administration has done a number of things already. This year, for example, we tripled government investment in community technology centers from \$10 million in fiscal year '99 to \$32.5 million in



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As the promise of “a chicken in every pot” gives way to pledges of “a T1 line in every classroom,” it’s clear that politics has changed forever. What have the presidential contenders been saying about information technology, and why does it matter now more than ever?

IT'S FIRST Hurrah

BY TOM FIELD AND ELANA VARON

It's the picture-perfect campaign stop, a mere few days into the third millennium: Bethany Covenant Church, a gray-clapboard and white-brick meeting house tucked into the woods off a two-lane highway in Bedford, N.H. The church's tall, white steeple evokes Colonial New England. Inside, Republican presidential candidate Sen. John McCain of Arizona greets some 300 local citizens, many of whom in a few weeks will vote in New Hampshire's first-in-the-nation presidential primary (and hand McCain a lopsided victory over Texas Gov. George W. Bush).

But make no mistake. Despite the old-world trappings, neither the candidate nor his prospective sup-

porters dwell on the past. Taking a question about education policy from one of a group of schoolkids assembled before the TV cameras, McCain seizes the opportunity to talk about technology. “We’ve done a wonderful job wiring every school and library to the internet,” McCain tells the audience. But that’s only the first step to enabling everyone to share in the benefits of what even this conservative combat veteran, who touts “the unifying values” of traditional patriotism, calls the “information technology revolution.”

McCain isn't the only candidate taking IT to the campaign trail. Campaign 2000 marks the beginning of a new election era enabled, at least in part, by new-



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economy ideals and dollars. For the first time in history, technology issues—and perceptions about which of the

candidates is most technology savvy—have the potential to help decide a presidential election. Consequently, McCain and all the top contenders have cast their campaign nets wide to capture both technology mindshare and donations from the deep-pocketed movers and shakers of the IT industry. Along with the typical death-and-taxes issues, each of the major candidates is touting his IT savvy and

When it comes to soft-money donations, Microsoft has risen from 359th place in 1996 to 11th place in 1999. They and other vendors have seen the political light.

experience in hopes of convincing voters that he is the best choice to steer the country into digital prosperity.

But perceptions of IT savvy may not be decisive for many voters, at least not yet—even among those who are most familiar with the issues. Out of nearly 200 senior executives—most of them CIOs—who responded to a Jan. 31 survey administered at CIO's Enterprise

Value Retreat in Arizona, the largest percentage were decidedly unimpressed with the IT credentials of any of the candidates; 31 percent said that none of the candidates are knowledgeable about IT issues. Finishing second to "nobody" was Vice President Al Gore (24 percent), followed by Bush, Steve Forbes, McCain and former Sen. Bill Bradley. When asked who they'd vote for if the election were held that day, respondents overwhelmingly favored Bush (42 percent), followed by McCain (21 percent), Gore (13 percent) and Bradley (12 percent).

Still, it's not surprising that reasonably well developed IT-related positions have begun to emerge from the campaigns (granted, in some cases, only once we had asked). After all, the extraordinary technology-driven economic and cultural changes that have occurred since the Clinton administration took office are unlikely to slow down over the coming years. Whether Republican, Democrat or Reform (OK, it's a long shot), the next president will preside over a Congress that is likely to enact landmark e-commerce legislation, and he will probably appoint one or more Supreme Court justices who may ultimately decide cases that settle the terms and conditions of e-business and data privacy. "There's a whole range of internet-related issues that haven't reached legal maturity yet," says Harris Miller, president of the Information Technology Association of America (ITAA), a beltway-based IT trade association. "So, yes, there is a very good chance that the next president will have a huge impact on the Supreme Court and on these issues."

It's a big change from eight years ago, when it was a major deal that Democratic candidates Clinton and Gore had their own e-mail

Flex Time

As the primary season winds down, election 2000 gives the high-tech industry an opportunity to flex some newly built muscle

In past elections, technology power brokers have more or less dissed the political process, refraining from any substantial lobbying or politicking. But in the wake of such watersheds as the Microsoft antitrust suit, there is growing awareness that the high-tech industry can't ignore government and make it go away.

In fact, the Greater Washington, D.C., high-tech community recently banded together to form CapNet, a political action committee chartered solely to promote IT issues and tech-friendly politicians. Since its inception last July, CapNet has grown to more than 40 members, including such powerful technology vendors as IBM, Microsoft and Oracle. "The technology community finally understands that it needs to engage the political process, and we expect to be very aggressive in the next election," says Timothy D. Hugo, CapNet's director. In addition to weighing in on IT-centric legislative issues, Hugo says, CapNet will produce periodic scorecards on legislators' technology votes, and the group will endorse a slate of congressional candidates. "We will support candidates that support the technology companies' agenda," Hugo says.

Individually, high-tech companies have become avid donors to both major political parties. According to Public Disclosure, a Washington, D.C.-based company that republishes Federal Election Commission data on its FEC Info website, five top software and telecommunications companies have been among the 20 largest corporate contributors of so-called soft money to Democrats and Republicans in the 1999-2000 election cycle, with AT&T heading the list and Microsoft at number 11 as of late in 1999. In the 1995-1996 election cycle, AT&T ranked ninth and Microsoft ranked 359th in soft money contributions.

But will the technology community choose sides in the presidential race? This is where election talk gets interesting. Traditionally, big business leans Republican, and as Harris Miller, president of the Information Technology Association of America, a D.C.-based IT trade association, points out, this is the first election where the big technology businesses have had Republican candidates who understand and represent their issues. Does it follow, then, that the high-tech community is most likely to fall in behind the Republican line? Not necessarily, Miller says. "High-tech companies are going to fall in behind smart lines," he says. "No one's going to bet the ranch on one [presidential] candidate or another because companies aren't going to want to be perceived as being in one party or the other." Instead, Miller foresees companies dividing their loyalties, for example, a high-profile CEO may support the Republicans, while an equally vocal COO endorses the Democrats—no doubt making for some interesting executive staff meetings.

—E. Varon

addresses, much less a plan for wiring the country. Four years later, the duo was on the cutting-edge with its static website. Meanwhile, the main Republican opponents—George H.W. Bush in 1992, Bob Dole in '96—appeared just slightly more tech-friendly than your average unreconstructed Luddite.

This time around, of the candidates who entered the early caucuses and primaries, four can claim recent technology-related accomplishments. Gore, of course (his internet paternity claims aside), has spearheaded technology policy for the Clinton administration. McCain and Sen. Orrin Hatch (now long out of the race), as chairmen, respectively, of the Senate Commerce and Judiciary committees, currently play key roles in writing the rules for e-commerce. And George W. Bush, as Texas governor, recently empaneled an e-government task force to determine the opportunities for delivering more state services online.

With the stakes clearly rising around a host of IT-related issues, CIO recently polled the field of candidates for their views. When it comes to e-commerce, e-government, privacy and security, the digital divide, telecommunications, encryption, trade and the technology workforce, what do these diverse presidential aspirants have to say?

To some extent, their answers are the kinds of vague pronouncements typical of politicians trying not to hem themselves in. Nevertheless, as they seek electoral and financial support from IT vendors, business leaders and a general public that is only beginning to grasp the influence technology exerts on their lives, their positions offer clues as to how they'll approach the issues—and how important IT policies are to their overall platforms. In cases where a campaign failed to respond to our inquiries, we gathered what we could from the candidate's public statements or track record.

Although all but two of the contenders have given up the race since we reported this story, we decided not to do any last-minute pruning so that readers can get a full sense of the range of views expressed over the course of the primaries. As the campaign season progresses, we will continue to cover the role IT issues play in the race. For that coverage, please visit www.cio.com/forums/government.



Bill Bradley

E-Commerce

Opposes internet taxation for now, but won't limit future options. On his campaign website, it says Bradley "supports the Commission on Electronic Commerce's efforts to develop a tax policy that

encourages the astonishing growth of the internet and electronic commerce, but is fair to brick-and-mortar businesses and does not erode the state and local revenue stream."

Telecommunications Policy

Favors open-market competition but does not rule out stepping in to mandate cable access for internet service providers.

Digital Divide

Would invest \$2 billion to improve the technology infrastructure of community colleges.

Privacy/Security

Advocates use of the internet to provide accessible, accurate health records but also supports patient data privacy protections. Supports efforts to limit children's access to internet pornography.

World Trade

Calls Clinton administration's new encryption policy a "step in the right direction" but advo-

cates using a "common sense policy" for export controls that balance security, civil liberties and e-commerce concerns.

Workforce Issues

While Bradley's website stresses "preparing Americans for opportunities in the high-tech sector," in the short run he supports a review of the H1-B visa program "to make it more efficient and responsive to industry needs"—including an increase in the current cap.

George W. Bush

E-Commerce

Would ban internet taxation until 2004, then review impact of lost sales revenue on state and federal coffers. Supports creation of a permanent research and experimentation tax credit.

E-Government

Supports efforts to make more government services available

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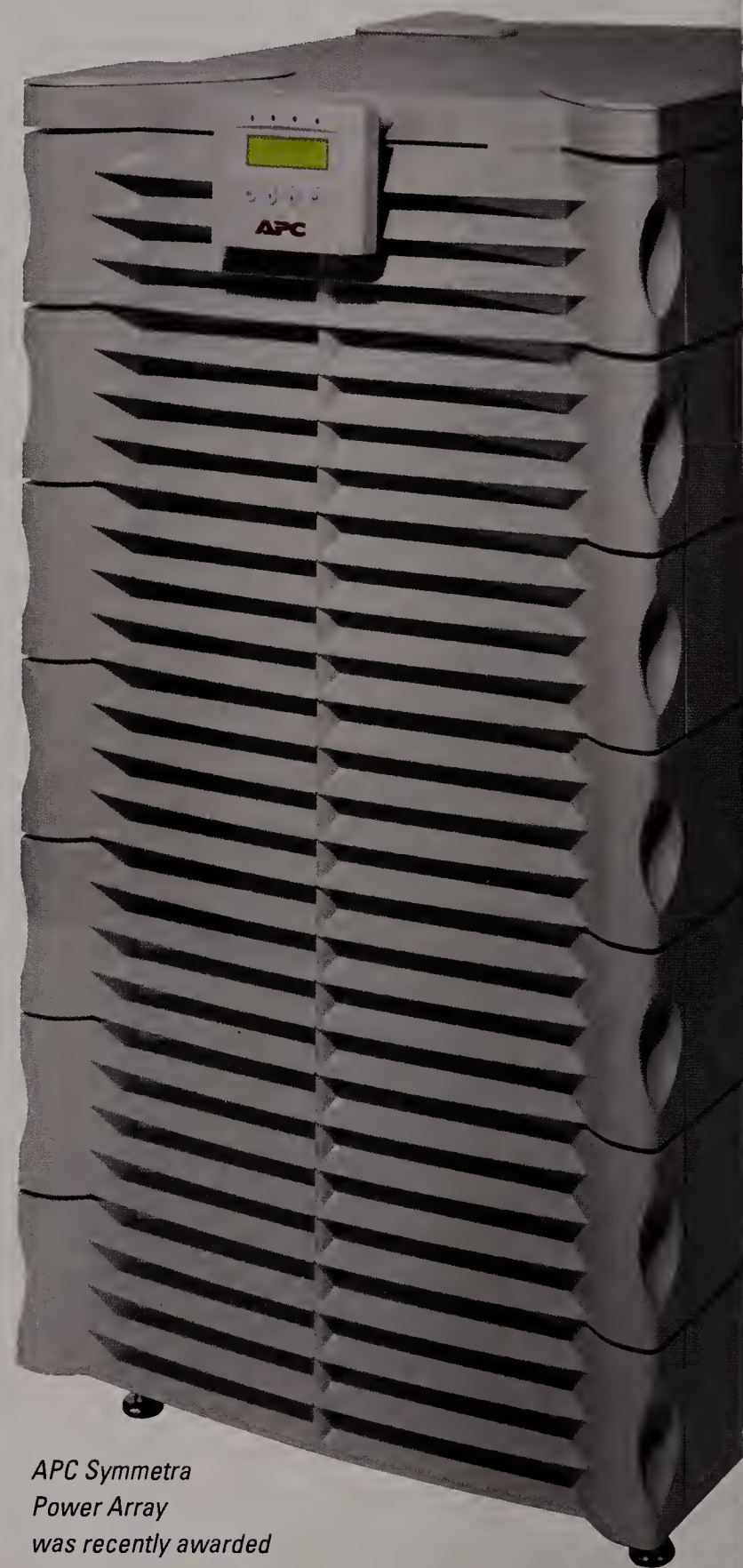
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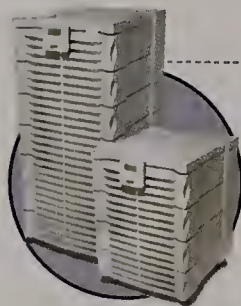
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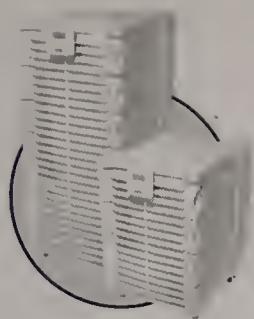
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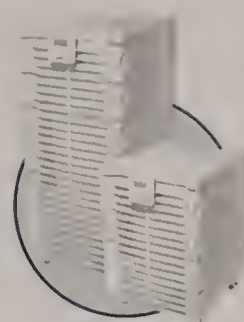
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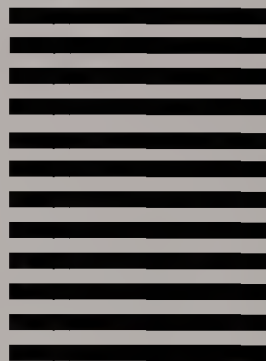
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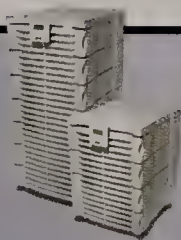
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electronically to citizens.

Telecommunications Policy

Supports 1996 Telecommunications Act; favors consumer choice and open-market competition for cable TV and broadband services.

Digital Divide

Would invest federal dollars in

public schools, community centers and nonprofit groups to put technology tools and training in the hands of the have-nots.

Privacy/Security

Wants to see private industry attempt self-regulation before government steps in.

World Trade

Favors relaxation of encryption export controls; supports ascension of both China and Taiwan to WTO.

Workforce Issues

Supports raising quota of H-1B visas for high-tech foreign workers from 115,000 annually to 200,000.

target education and training funds, tax incentives for technology training and government bonds for wiring communities. Would make household internet access as common as telephone access.

Privacy/Security

Advocates "Electronic Bill of Rights" to protect consumer privacy, including the right to choose whether personal information is disclosed, to know how and when the information is used and to see it and verify its accuracy.

World Trade

Backs new administration policy allowing commercial encryption of any key length to be exported after a one-time government review to determine that the product could not be altered by users. Supports duty-free internet trade; would press other countries to forgo trade rules that might impede e-commerce.

Workforce Issues

Would consider revisiting whether to increase the number of H-1B visas. Would focus, however, on retraining American workers for high-tech jobs, improving college high-tech programs, encouraging women and minorities to pursue high-tech careers and improving K-12 math and science education.

Albert Gore Jr.

E-Commerce

Supports extending current moratorium on internet taxation pending outcome of report by the Advisory Commission on Electronic Commerce. Says he is "committed to finding a solution that will allow e-commerce to flourish but will not strip states and localities of the revenue they need to educate children and fight crime." Would make R&D tax credit permanent, with special provisions to help small businesses.

E-Government

Would continue "Reinventing Government" program to reduce the size of government, cut red tape and put services online. Would also double the investment in IT research over the next five years.

Telecommunications Policy

Supports the "Next Generation Internet" research program to increase the speed of the internet by 1,000 times. Says he would promote "development of the internet's potential" but does not offer examples of specific policies.

Digital Divide

Would finish wiring classrooms and libraries to the internet and



John McCain

E-Commerce

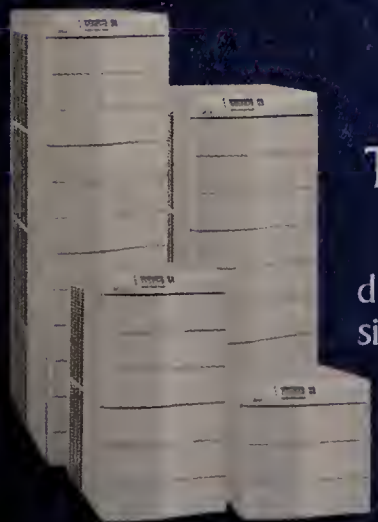
Would ban taxation of internet transactions. Would make R&D tax credit permanent.

E-Government

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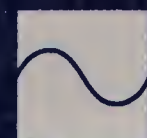
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services available online and request funding for this but sees no need for a comprehensive plan.

Telecommunications Policy

Thinks Telecommunications Act of 1996 fails to promote competition and would "scrap" it. Would ease regulation to encourage deployment of broadband networks.

Digital Divide

Wiring classrooms to the internet is "the first step." Would create opportunities for



privacy, but believes government has oversight role.

World Trade

Would allow export of any 64-bit encryption products and of

Favored Nation status and block its membership in the World Trade Organization until Chinese human rights policies change.

Pat Buchanan

(did not respond to CIO queries)

World Trade

(from policy statement)

Opposes China's entry in the World Trade Organization.

Steve Forbes

E-Commerce

Would maintain permanent ban on internet taxation.

Telecommunications Policy

Would accelerate telecom deregulation; would repeal the "Gore Tax" on long-distance phone service and the 3 percent federal excise tax on telecommunications.

Digital Divide

Would allow parents to choose which schools their children attend.

Privacy/Security

Would block any efforts to require national health ID cards and would shut down any federal medical database containing information "Washington does not need and has no constitutional right to have."

World Trade

Would welcome Taiwan into WTO ahead of China.

Workforce Issues

Increase quota of H-1B visas for high-tech foreign workers.

A survey of CIOs suggests they have little respect for the IT savvy of any presidential contender. But, among the field, Gore took top honors with a paltry 24 percent.

low-income people to get high-tech jobs by expanding local control over federal grant funds, encouraging military personnel to become teachers upon retirement and authorizing school vouchers for low-income students (see also "Workforce Issues," right).

Privacy/Security

Opposes any requirement that software manufacturers provide law enforcement with access to software keys to decode encrypted messages. Supports self-regulation of businesses to protect consumer

stronger encryption in some circumstances. Supports duty-free internet trade.

Workforce Issues

Would eliminate cap on H-1B visas for technical workers through 2006 while giving job training funds to states, money to train math and science teachers, and grants to improve tech skills of schoolchildren.

Gary Bauer

(Bauer's campaign did not respond to CIO queries)

Privacy/Security

(from policy statement)

Doesn't want government peeking at citizens' private financial or health data. No thoughts, though, on how he'd regulate businesses from doing the same.

World Trade

(from policy statement)

Would deny China Most

Also advocates withdrawal "from international organizations [meaning the WTO and the UN] that imperil our financial stability and economic independence." Would "open foreign markets to American products by requiring reciprocal trade policies."

Workforce Issues

(from policy statement)

Wants to curb current immigration regulations and preserve U.S. jobs for U.S. citizens.





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cybersquatting. Would make R&D tax credit permanent.

E-Government

Believes government agencies should deliver services online.

Would advocate policies to encourage technological innovation but did not offer specific proposals.

Telecommunications Policy

Enforcement of antitrust laws will ensure competition for broadband services as the telecommunications industry is deregulated. Supports Telecommunications Act, but says it may need to be revisited if changes in the industry jeopardize competition and deregulation.

Digital Divide

Wants publishers to have incentives and adequate copyright protections so that they will provide digital educational materials to teachers and students in distance-learning programs. Supports efforts to make internet access more widely available.

Privacy/Security

Supports self-regulation of businesses to protect consumer privacy, with government oversight, possibly modeled on securities industry.

World Trade

Supports making it easier for software companies to export encryption products. Supports duty-free internet trade. Would negotiate to eliminate other barriers to trade, including "arbitrary" technical standards, limits on market access to network, information service and content providers.

Workforce Issues

Has introduced a bill in Congress raising the annual cap on H-1B visas to 195,000, but

Tech Talks

Presidential hopefuls may not know the CIO audience, but when vendor luminaries call, they listen

It isn't easy getting through to the presidential candidates.

CIO Senior Writer Elana Varon and I spent more than a month trying to pin down each of the 10 major contenders for just 15 or 20 minutes each—time enough just to get their thoughts on the half-dozen or so top IT-related campaign issues. Granted, time is precious on the campaign trail, but for the opportunity to have access to an audience of tens of thousands of Fortune 500 business executives? We thought the campaign staffs would fall over one another lining up their candidates outside our door.

We were wrong. E-mails, faxes, phone calls—all of our personal pleas were virtually ignored by most of the campaign staffs, which frankly had more interest in talking to a 20,000-circulation New Hampshire daily, the *Portsmouth Herald*. What does CIO stand for, anyway?

As the deadline neared, I expressed my frustration

to CIO publisher Gary Beach, who remarked casually that he had some contacts in the Bush campaign. He gave me two e-mail addresses, which I won't reveal here, but trust me, they were biggies—top executives of brand-name technology vendors. Names you definitely know.

So, I e-mailed each of these gentlemen, dropping Gary's name and asking if they could help patch a line between CIO and the Bush office. Within two hours, I not only had a positive response from one of these executives; I also had him introducing me to a top Bush campaign staffer via a cc'd e-mail that said essentially, "This is a magazine you guys should be talking to." By the end of the day, I had an e-mail from the Bush staffer asking, "How can we help you?"

Moral of the story: The presidential candidates may not know how to reach the tech audience, but they sure have learned to listen to the right vendors. —T. Field

believes the high-tech industry's long-term needs should be addressed by improving the domestic educational system. Supports retraining opportunities for dislocated workers.

Alan Keyes

E-Commerce

Would consider internet taxation as part of his plan to

replace income tax with national sales tax, but only after an appropriate moratorium to make sure e-commerce is firmly established. Otherwise opposes government regulation of the marketplace. Against taxes on internet access.

E-Government

Supports use of technology to deliver services online "to the fullest extent possible."

Telecommunications Policy

Favors less regulation of industry than current law allows. Government should not interfere with consolidation of industry and technology convergence.

Digital Divide

Believes government intervention is unnecessary to deliver internet access to low-income people, because the computer industry is offering deals to

attract new customers.

Privacy/Security

Supports self-regulation by companies to protect consumer privacy. Wants to maintain existing "constitutional protections" for individuals against access by government to personal information.

World Trade

Thinks restrictions on export of encryption should not be relaxed to protect national security. Government should "stop giving away" access to the U.S. market to countries that don't open their own markets. Would immediately withdraw from the World Trade Organization.

Workforce Issues

Would expand cap on H-1B visas yearly based on needs of industry.



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good HELP *is hard to find*

So how does this megabank manage to keep its internal customers happy?

BY POLLY SCHNEIDER

HELP DESKS ARE LIKE THE LOCAL UTILITY COMPANY: You forget they exist until a storm knocks out your power and you're stuck in a cold, dark house. Their role in keeping companies running smoothly is critical, yet often thankless. Help desk employees get little recognition, spend most of their time fighting fires and must meet ever-rising expectations for today's tech-savvy workforce. Nevertheless, if a help desk is consistently below par, its leaders may find themselves being helped to the exit door.

So how does an average help desk become an outstanding one? The caliber of the staff is paramount, but there are other considerations. Successful help desks display a high degree of teamwork, have sophisticated training and education programs, enjoy support from senior management and can effectively integrate new technologies, says Ron Muns, chairman of the Help Desk Institute, a major industry group based in Colorado Springs, Colo. (See "Help Desk Checklist,"

Learn how to

- Get the most out of your tech support system
- Make organization and teamwork the building blocks of a first-class help desk

PHOTOGRAPHY BY KENT HANSON



ONE OF 282 HELP DESK EMPLOYEES, BANK OF AMERICA ANALYST LISA SHARP HELPS TO HANDLE MORE THAN 3,700 CALLS EACH DAY.

Page 128.) Muns points to Bank of America as an example of a company with a world-class help desk. A visit to its center in Concord, Calif., reveals some best practices for building a help desk from scratch or reengineering an existing one.

It's Not Chaos, Really

ON THE FLOOR OF BofA'S HELP DESK center, serenity rules. Help desk workers, called analysts, sit in oversize cubicles in spacious groupings of four or six desks. Wearing headsets and speaking in calm, cheerful voices, they answer calls and toggle expertly between windows on their desktops as they search for answers. Somehow, they manage to smile when irate callers vent in their ears.

Yet beneath the facade of tranquillity flickers an unmistakable current of frenetic energy. At noon, four hours into her shift, analyst Geri Connolly is in the midst of one of the many juggling acts of her day. She chats easily with her current customer, Steve, commenting on the weather and reassuring him that help is on the way. A new account manager, Steve is flustered because he can't find customer information in one of his applications. While Connolly helps him, a coworker stands at her cubicle with an urgent question and her phone beeps with the next waiting call. Time is of the essence here. The bank has stringent service level standards for response time, and Connolly doesn't want to be the slow cog in the wheel.

Unable to locate the problem, Connolly transfers Steve to a more experienced analyst and logs the case into the help desk system on her screen. Quickly, she answers the next call—an easy question about the process for ordering a new product—and hangs up the phone.

The can-do attitude of workers like Connolly pays off: The bank is meeting or exceeding industry standards for response time and quality across its four help desk centers in Richmond, Va., Concord, Calif., Seattle and Dallas. Nearly 80 percent of calls are answered within 30 seconds, and 87.5 per-

cent of problems are resolved without being transferred to IT specialists in the bank—compared with GartnerGroup's average of 64 percent call resolution at first contact.

Keeping those high service standards is no cakewalk for the bank these days. Tech support is just one of the many BofA units struggling from the 1998 merger with NationsBank. The union brought together two help desks from each bank, each with different processes and technologies. Ed Hawthorne, senior vice president of technology support, leads the bank's national help desk operation and has the formidable challenge of bringing the new bank's support strategy smoothly into the future, which means coming up with standard processes and systems and refining people skills.

Organization Matters

IT'S 1 P.M., AND DALE, A BANK EMPLOYEE, is having trouble with his internet password. Analyst Lisa Sharp patiently helps him navigate through the process of selecting a new one, and five minutes later he's ready to surf. "That was painless," Dale says happily as he hangs up the phone. Sharp says she has several repeat customers who ask for her by name.

Employees like Sharp must be prepared to provide speedy answers to questions about hardware, software, operating systems, networking, and even voice and video systems. The volume and staffing needs are enormous: A total of 282 help desk employees nationwide handle a combined average



THE CAN-DO ATTITUDE OF HELP DESK ANALYSTS LIKE GERI CONNOLLY PAYS OFF.



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End-User Support

of 3,700 incoming calls a day. Carefully orchestrated processes ensure that the help desks run like clockwork from the moment a call hits the floor.

Here's how it works: An employee dials one of three national help desk numbers based on their department or region (eventually the bank will have just one number, routing callers to an appropriate center based on the nature of the problem). Next, the automated menu on a hardware/software device called the VRU, or voice response unit, routes them to first-level support, a group of 70 analysts stationed in Concord who try to pinpoint the problem. If the first-level analyst cannot resolve the call, he or she transfers it to the second-level group of 11 analysts organized by specialty, such as desktop support or branch systems. If all 11 second-level analysts are busy, an analyst will call the customer back as soon as possible—although Hawthorne says this is more often the exception than the norm. Two smaller groups handle voice and video-conferencing calls.

Finally, if the second level can't resolve a problem—usually because a repair is necessary—the analyst transfers it outside the help desk to third-level support or dispatches a technician from the vendor. Third level is a diffuse network of technology-specific groups within Technology Solutions, BofA's 5,000-person umbrella unit responsible for infrastructure and telecommunications. Whether the call goes to third level or not, the help desk follows it and keeps in close contact with the customer through e-mail updates until the problem is fixed. "We own the relationship from the first call to resolution," says Marti Levada, senior vice president of support.

Speedy Systems and Tight Teams

THIS COMPLEX MAZE OF COMMUNICATION is managed through the combination of a help desk system from Tivoli, the VRU and small electronic message boards that hang from the ceilings. The mes-

sage boards link electronically to the VRU and display information about the call volume at each of the four help desk groups. When things are really cooking, second-level analysts can pick up first-level calls still in the holding queue. At the desktop, analysts use the Tivoli system for all their tasks:

accessing product and support knowledge bases and problem scripts (there are 3,500 scripts at BofA), logging and tracking problems, and transferring calls to other groups. An internal messaging system broadcasts alerts about major server crashes or nosy magazine reporters lurking around.



AS SENIOR V.P. OF TECHNOLOGY SUPPORT, ED HAWTHORNE LEADS BANK OF AMERICA'S KNOCKOUT HELP DESK OPERATION.

The system also uses demand forecasting and historical analysis to help managers with the complex task of scheduling the appropriate number of analysts for every day of the week. Even so, kinks from the merger remain. The Richmond and Concord centers had different VRU menus, and the two groups still have not agreed on a common one. Also, the two centers have different staff models: Richmond's analysts are much more specialized than Concord's. Hawthorne is working on defining a common organizational design.

It goes without saying that a \$30 billion financial institution has pockets deep enough to absorb the costs of fancy technology and a specialized staff. Still, through what Hawthorne calls "creative staffing," the bank tries to keep costs down wherever it can. When the Concord and Richmond centers made the transition to full 24/7 operations in July 1999, they did it without hiring additional people. First-level analysts were already staffed 24 hours a day, while second-level folks now rotate through pager duty for week-long shifts.

This organized system of backups is what allows the centers to maintain their high service levels. Hawthorne depends on his people more than on any whizbang technology. "They really understand the value of what they do, all the way to the end customer," he says. Every day from 7 a.m. to 1 p.m., the Concord center's peak hours, a second-level analyst roams the floor to offer on-the-spot help to coworkers on the phones. On Monday mornings, the busiest time of the week, managers can be found working the phones too.

The team culture proved invaluable last year during the confusion of merging the companies. Call volumes went through the roof, mostly because employees changing locations wound up calling the wrong help desk. Service levels plummeted for several months, so a group of analysts formed an ad hoc team and came up with a plan to reassign the desk's e-mail specialists to better distribute workflow. Ultimately, service levels rose—in part from the reorganization

but also as a natural result of the merger chaos dying down. The plan delighted Hawthorne because it required no additional staff or tools. The team was equally pumped up about its accomplishment, and members received incentive pay for their efforts.

If You Train Them, They Will Stay

BUT TEAMWORK ISN'T THE ONLY thing the help desk has going for it. BofA has discovered that training gives employees the chance to make a broader impact on the organization—and hopefully stick around. A few years ago, Levada says they were lucky to keep analysts for more than a year. Today, thanks to career planning support, education and project work, employees stay an average of three years. New employees are hired for their technical proficiency and then go through three months of classroom and/or on-the-job training. Analysts learn about the technologies in their functional area, like PC support, but are also cross-trained on common issues so that they can answer all calls during crunch times.

From there, employees can map their career paths and take computer-based training through the bank's virtual campus on the intranet, which won a corporate university award from the National Alliance of Business in 1999. To reduce burnout, Levada says she'd like employees to spend 20 percent of their time away from the phones in self-learning activities—though she admits the help desk has not yet achieved this goal.

Employees also know they don't have to be stuck on the phones forever, if that's not their calling. As the centers become more specialized with departments for quality improvement, process design and special projects, there are more options for moving around. The bank is also working with industry groups to introduce certification levels for help desk workers. "That will make the job more of a profession," Levada says. And many employees bring specialized expertise that rounds out their job descrip-

WATCHING THE NUMBERS

Here's how it breaks down at Bank of America's four help desk centers

STAFF

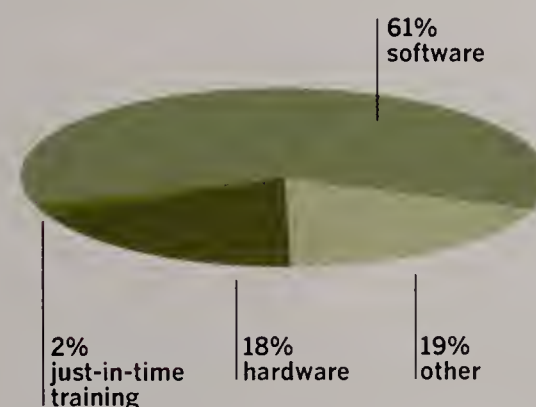
Richmond, Va.	157
Concord, Calif.	95
Seattle	12
Dallas	18

CALL VOLUME

1.34 million	number of annual incoming calls
3,700	number of daily incoming calls
684	average number of calls per analyst per month
5	average number of minutes per call

CALL BREAKDOWN

Percentage of total problems



SOURCE: BANK OF AMERICA

tions. A long-time customer service representative prior to working at BofA, Connolly leads soft-skills workshops for coworkers as her schedule allows. While Hawthorne would not provide numbers, he says the help desk's attrition rate has declined dramatically in the last year.

Better, Faster Service

HAWTHORNE AND HIS MANAGEMENT team are constantly looking for ways to ease the frustration of their customers. His long-term goals include providing more automation and more self-service capabilities. And the bank will simplify by consolidating its four centers to three sometime this year. In addition, Hawthorne hopes the common help desk information system will make the user experience virtually seamless and more consistent.

In the future virtual help desk model, when calls go through one phone number instead of three, the phone system's routing capability will be able to spread demand

between the three centers during busy times. Hawthorne also plans to reduce the help desk's costly call volume by allowing customers to send e-mail requests for help or search for answers right on their desktops through the company's intranet or scripts embedded in applications. Employees can already check the status of their problems on the intranet, which has reduced call volume by 1,000 calls a month.

Monitoring performance is high on Hawthorne's list. He does it through standard measures like response time, but also through

regular customer feedback. Monthly customer satisfaction surveys go out to random samplings of 4,000 employees nationwide, and they provide valuable clues for future improvements. Burning issues for the moment include dissatisfaction with the help desk's automated menus and service delays for severe problems that require outside help or vendor involvement. The centers' quality response team monitors these severe cases, provides frequent status updates to the customers and looks for common problems and prevention strategies.

At the executive level, it's Hawthorne's job to maintain good relationships with bank managers, and he often hosts help desk tours for senior vice presidents (the CEO even showed up once). "If their people aren't productive, we hear about it," he says.

Hawthorne isn't reluctant to talk about the help desk's (virtually) spotless track record and rosy outlook. Yet he knows that the slightest dip in service could be disastrous if it affects the bank's profitability or customer relations. At the same time, Wall Street is keeping a close watch on the merger. Like other BofA executives, Hawthorne has to keep his costs low to meet postmerger financial goals. Above all, he must continue to ensure that all 158,000 of the bank's tech-dependent employees are productive. "There's no time of the day when the phones aren't ringing," Hawthorne says. **CIO**



MARTI LEVADA, SENIOR V.P. OF SUPPORT, ASKS THE HELP DESK TO KEEP IN TOUCH WITH THE CUSTOMER UNTIL RESOLUTION.

HELP DESK CHECKLIST

Four must-haves for world-class support organizations

1 Management buy-in The corporate culture must place a high value on support.

2 Professional training Includes analyst skills, technologies, and on-the-job training and coaching for an average of three months.

3 Team attitude Flexibility and collaboration get problems solved faster.

4 Technology integration There is no single vendor solution. The challenge is making all the pieces fit together.

SOURCE: RON MUNS, HELP DESK INSTITUTE

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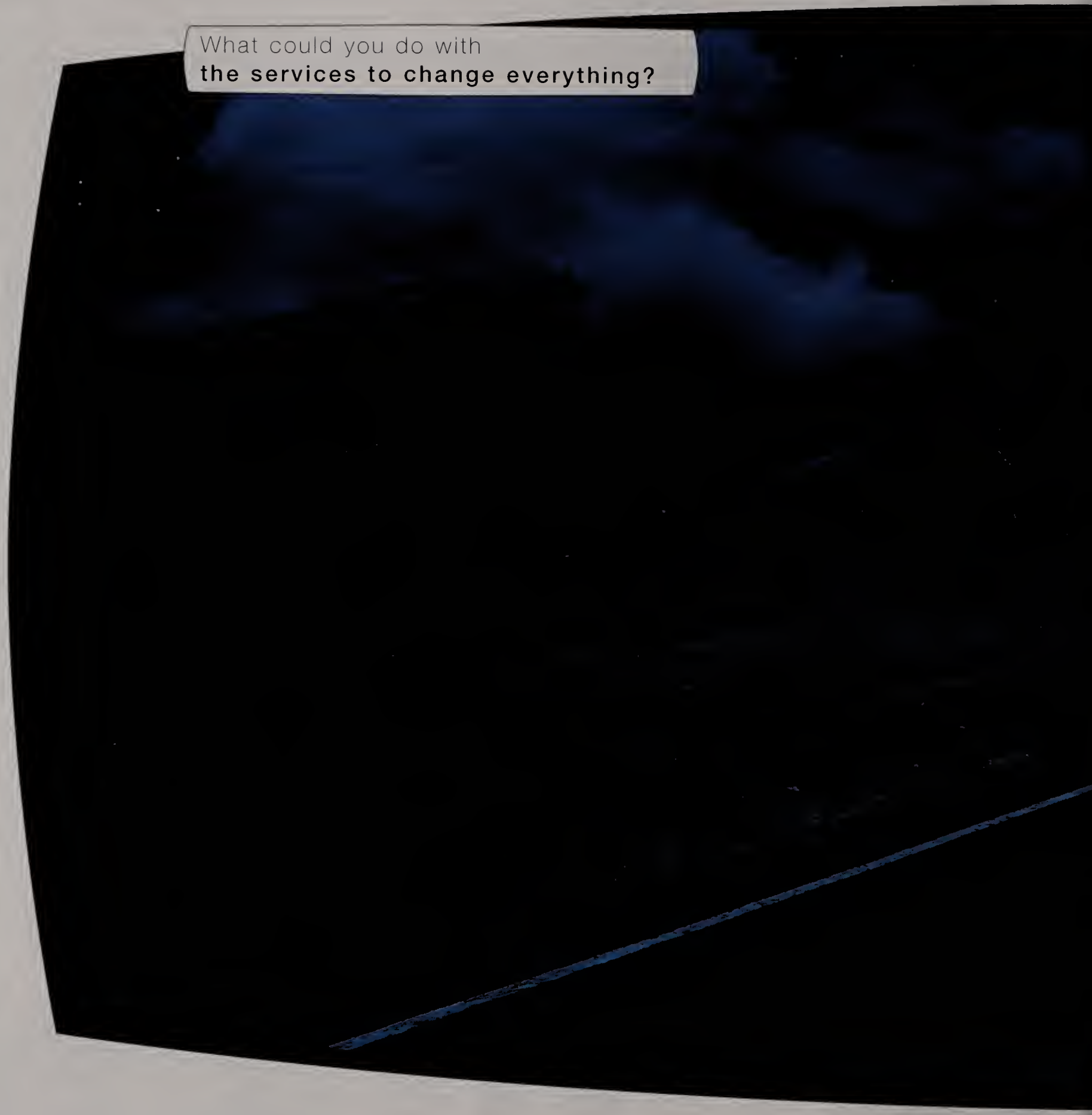


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*Should you patent your business
processes or keep them secret?
Both paths are fraught with peril.*

BY JENNIFER BRESNAHAN





SON

H

ow can you tell the difference between a lawyer and a skunk lying dead on the road? There are skid marks before the skunk. How can you tell the difference between a company that shelled out hundreds of dollars per hour in legal fees to protect its intellectual assets and one that didn't? The first marked a record-breaking quarter; the other is no longer in business.

You probably don't want to hear this, but your professional destiny may well lie in the hands of twenty-something attorneys in intellectual property law firms, learning on the job while charging \$150 an hour. Or, if you prefer, in the hands of the partners who oversee the young-uns—for a mere \$500 an hour.

Think of your company's most important business process or innovation. Then imagine not being able to use it because your competitor's lawyer figured out a way to patent it. Or imagine watching your competitors gleefully adapt your secret technology application because you trusted your lawyer to write an employment contract that would keep employees from blabbing the secret to the world.

"But why should *I* care?" a CIO is bound to ask. "Isn't that stuff the job of corporate counsel?" Right, like profits are strictly the concern of the CFO. CIOs should care about patents and trade secret protection for three reasons. First, fail-

Learn

- ▶ The benefits of patent holding and trade secrets
- ▶ The dangers of both of those
- ▶ Precautions that will serve you well in court

ILLUSTRATIONS BY MICHAEL MORGENSTERN

ure to do so can deep-six the bottom line. In the worst case scenario, a company could be forced to stop using mission-critical processes or applications. Then it could be hauled into court and forced to pay millions of dollars in damages for infringing another company's patent or stealing its trade secrets. CIOs have a duty to educate themselves about something so vital to their company's operating success. Second, they have a personal stake in the matter because when violations of intellectual property laws are especially egregious, executives can be held personally and criminally liable. Granted, this outcome is unlikely, but a little knowledge still goes a long way

toward prevention. Finally, CIOs should

know about the latest developments in patent and trade secret law because they represent a huge opportunity to make money for the company, and to come out looking like an ace. Many business executives have no idea that the patent system now permits companies to get patents on technology and business processes—patents that mean big money for the

patent holders. Who better than the CIO to suggest possible technology systems for patenting? Similarly, CIOs can help their companies gain competitive advantage by guiding the executive team to institute a smart trade secret program. Need to know more? Read on.

BUSINESS PROCESS PATENTS

Dibs on That Idea

Just how many ways are there to do business on the internet? You might think there could be as many new e-business models as there are creative ideas and innovative technologies. But when the definition of "way to do business" can be as basic as using an electronic shopping cart or enabling customers to make secure online credit card payments, the possibilities narrow. There simply aren't too many other options for electronic commerce transactions.

Recent developments in the United States Patent and Trademark Office (PTO) and in the courts suggest that some of the most common of these e-commerce processes, as well as many other key business and technology processes, are now owned by individual companies holding patents. Think about it. Microsoft's market hegemony is nothing compared with a company that holds a 17-year monopoly on the process or mathematical formula necessary to do such functions as electronic commerce or online content delivery. And

this isn't fiction—it's really happening. If the trend continues,

the marketplace will be divided into the haves and have-nots like never before. The haves—companies that came along at the right time and had the sagacity to apply for business model and software algorithm patents—will own the key processes for doing business on the web. The rest of the great

unwashed business masses that did not contemplate using the patented process until after the patent

holder submitted its patent application will either be blocked from doing electronic commerce (unless they can devise totally new methods) or be forced to pay royalties to license the process from the patent owner.

For an idea of how far reaching the implications of these business patents are, consider some that have been granted thus far. The electronic shopping cart concept and the system for secure credit card payments over the web is owned by Open Market in Cambridge, Mass. Push technology's most common manifestations are patented by a few fortunate companies, including NetDelivery and VCast. (See "Who's Got What," Page 136, for more examples).

If you can't quite get your head around the idea of somebody being able to own a concept as common as push technology, you're not alone. But believe it. In truth, the concept is not altogether shocking from a legal standpoint—if a party can get a patent on a new light bulb, why not an innovative business process? But from a business perspective, business process patents are a cataclysmic phenomenon that will forever alter the landscape.



*B*usiness process patents are a cataclysmic phenomenon that will forever alter the landscape.

Ancient History

Two years ago, such patents would have been unthinkable because courts would not enforce patents on abstract ideas. That changed with the Federal Court of Appeals' 1998 decision in *State Street Bank & Trust Co. v. Signature Financial Group Inc.* Signature had a patent on a data processing software system that performed a set of elaborate calculations required to maintain a complex investment portfolio. State Street Bank wanted to license the technology from Signature. When negotiations broke down, however, State Street challenged the patent as invalid because the system was based on a previously unpatentable mathematical algorithm. The Federal Appeals Court surprised the world by finding the patent valid, thus opening the door for new patents of abstract business models.

This decision caused turmoil in the business world. "Nobody thought business process patents were available before," says Anthony J. Carbone, partner at the New York City law firm Richards & O'Neil. "It seemed unfair that [a company] could suddenly patent processes that other companies had been using for a long time."

One reaction to these developments has been to engage in "defensive patenting," which means paying \$7,000 to \$20,000 in attorney's fees to submit a patent application in the hopes of being first. The PTO is granting new business process patents every week.

The Game's Not Over Yet

The situation may not be quite as dire as these facts would suggest. In 1999 Congress passed the American Inventors Protection Act, which provides that any company that had been using a business process or algorithm for at least a year prior to its being patented could continue to use it, patent notwithstanding. Patent holders have the right to use the business process to the exclusion of all others, including companies that may have independently conceived of the idea less than a year before

the patent was granted. These latecomers will either be prevented from using the process or will be charged fees and royalties. In extreme cases, they may also be sued for all the profits they earned from their illegal use of the patented process or technology.

Not all patents granted by the PTO will be enforced by the courts. When the PTO considers a patent application, it decides whether the innovation is novel, useful and nonobvious in the legal sense. But it lacks the resources to perform an exhaustive search to see whether that is truly the case. Companies can challenge a patent if they think the PTO made a mistake. The majority of patents, however, will be enforced. The Federal Appeals Court that hears all patent challenges tends to be sympathetic to the patent holders.

And Amazon.com's recent success in court does not bode well for the patent have-nots. In December 1999, the United States District Court for the Western District of Washington State upheld and enforced Amazon.com's one-click patent in *Amazon.com Inc. v.*

Patent or Trade Secret?

Patents and trade secrets are the ways companies can protect their intellectual assets. There are benefits and downsides to both.

PATENTS

Definition: The United States Patent and Trademark Office (PTO) will grant a patent to an inventor if the invention is new and useful, and nonobvious compared with prior inventions.

Benefits: Provide a 17-year monopoly on an idea, during which the owner has exclusive rights to profit from the invention and build name brand recognition in preparation for the end of the monopoly. Patents are appropriate for innovations that cannot be kept secret, such as a new business strategy that must be explained to customers.

Cons: The invention must meet the requirements of novelty, usefulness and nonobviousness. After the 17 years are over, ownership of the invention passes to the public and can be used by anyone.

TRADE SECRETS

Definition: Any information that gives a company competitive advantage by its not being generally known.

Benefits: Have the potential to endure forever. They are preferable when the invention would be obsolete by the time the PTO assigns the patent, or when the company plans to keep the invention a secret forever, as with the Coca-Cola recipe. A trade secret is useful for ideas that do not meet the requirements of a patent.

Cons: Competitors are free to study and take apart another company's invention to figure out how a trade secret works, and then use that knowledge. Another company could come up with the same idea on its own, get a patent on the invention, and block the original company from using it.

—J. Bresnahan

Barnesandnoble.com Inc. Like many companies in the internet space, Barnesandnoble.com believed Amazon.com's patent was invalid because it was too obvious and similar to what everyone was doing. Barnesandnoble.com offered its own one-click option for online purchases. Amazon.com brought Barnesandnoble.com to court, and eventually prevailed. The court ordered Barnesandnoble.com to stop offering one-click transactions, although it could continue to employ a virtual checkout line system. Barnesandnoble.com will undoubtedly appeal this decision, but the troubling precedent still stands. Amazon.com's patent is extremely broad and could potentially block many others from enjoying the staggering competitive advantage of an easy, idiot-proof version of electronic commerce.

Losers Weepers

Ironically, what may be unfolding is a scenario in which a few fortunate patent holders can accomplish the seemingly impossible task of making a profit on the internet. Few could have predicted that profits would come from such an indirect, unlikely source as business process patents. As an illustration, the website for internet software developer InterMind unequivocally states that its main purpose in securing its patent on the push model of content delivery is to collect revenue through a licensing program. The company considers any business that keeps a computerized file of information (meta data)

about subscriber preferences in order to enable automatic delivery of information over a computer network to be infringing on its patent. That's pretty broad. According to InterMind, possible infringers include the deep pocketed Microsoft and Netscape. As outra-

A *amazon.com's recent success in court does not bode well for the patent have-nots.*

geous as this may seem, it's simply good business sense. The way the law works, somebody will own the patent on that particular business process.

Whether InterMind would prevail in the face of a legal challenge remains to be seen. And that's the problem. The legal lay of the land is bumpy and certainly bound for upheaval in the years to come. For the time being, the patent holders seem to be laying low. For example, Open Market claims not to have plans to license its patents. It could be that it fears public outrage and legal challenges that could cost millions to defend. Simply owning the patents without collecting royalties is still valuable because of the bargaining power the patents offer for "cross licensing" arrangements with other patent holders.

There is little a company can do right now to protect itself besides getting its own patent as quickly as possible, says Carbone. Companies can also run a search for existing and pending patents in the PTO to see what patents they might be ignorantly infringing. But

Who's Got What

Many business methods are already patented; here are some patent holders and their protected processes. For more information, see the Patent and Trademark Office's website at www.uspto.gov.

Amazon.com (www.amazon.com) Method of online ordering using credit card

Citibank (www.citibank.com) Method of issuing and tracking electronic money

ShopWisely.com (www.shopwisely.com) Online coupon delivery

Cybergold (www.cybergold.com) Giving consumers incentives to respond to online ads

MessageMedia (www.messagemedia.com) Method of online payment using offline agents

Flycast Communications (www.flycast.com) Software that matches buyers and sellers of online advertising

InterMind (www.intermind.com) Push technology based on automated delivery of content to subscribers

Pitney Bowes (www.pitneybowes.com) Fifteen patents on several PC metering technologies, from printing postage on a standard computer printer to coding and decoding addresses

NetDelivery Corp. (www.netdelivery.com) Technology that delivers personalized content over the internet through automatic retrieval of URLs

Open Market (www.openmarket.com) Three patents including electronic shopping carts; secure credit- and debit-card

payments over the web; analysis of how users browse website content

Priceline.com (www.priceline.com) "Conditional purchase" technology, whereby buyers state how much they're willing to pay and Priceline finds a seller

V-Cast (www.vcast.com) Push technology, recoverable download, background delivery, scheduling and confirmation

Walker Digital Corp. (www.walkerdigital.com) Four patents for online gaming and travel, including a system that adds low-cost web purchases to a user's phone bill.

—J. Bresnahan



Holloway Sportswear with Intenia

Sidney, Ohio - Holloway Sportswear and Intenia recently celebrated a successful implementation of the Enterprise Application Solution, Movex. Roy Leasure, President of Holloway Sportswear, accepted the "Go Live" award on behalf of the implementation team.

Both teams worked closely together to help achieve the key milestone in the plan to support Holloway Sportswear's strategy for the future...



Global Expansion. "Like other industries, the sporting goods industry is on the threshold of an e-commerce revolution. Smaller companies just don't have the resources to do it on their own. It pays to have an Internet-savvy partner who can get the job done and let us focus on growing the business," said Steve Jenkins, Information Systems Director for Holloway Sportswear.

Holloway Sportswear manufactures a full line of high quality sportswear for the sporting goods and promotional products markets, with items such as monogrammed and embroidered awards, corporate and letterman jackets, golf shirts, and fleece vests.



there is no way to know what patents are pending. "It's thought that there are a lot of patents in process in the Patent Office that have not yet been issued," says Edmund W. Kitch, Joseph M. Hartfield Professor of Law at the University of Virginia School of Law. "Nobody knows what will pop out, and nobody knows what the courts will deem valid." Of course, applying for a patent carries its own set of pitfalls, the biggest of which is public disclosure of a potentially valuable trade secret (see "Patent or Trade Secret?" Page 135).

TRADE SECRETS

Secret Sharers

Two seemingly unrelated business trends combine to bring a second intellectual property peril to executives. One is the increased mobility of the workforce. Nobody knows better than an IT manager how fast employees come and go in today's economy. At the same time, more and more companies are choosing to bypass the patent system and protect their intellectual assets by simply keeping them secret, says R. Mark Halligan, partner in the Chicago law firm Welsh & Katz. Each of those phenomena makes the other more troubling.

Horror stories of trade secret losses abound. Most common is

when an employer thinks it's made itself safe from an employee telling secrets to its competitors, only to discover that the contract the employee signed to that effect is legally unenforceable. Or that the employee never signed a contract at all. Clearly, a volatile workforce makes secret-keeping a relentless challenge. If a departing employee knows even a piece of the employer's secret strategies, technologies, processes, suppliers or customers, he or she can suddenly become the company's biggest threat. Who knew that Joan in sales could bring the company to its knees with her specialized knowledge and memory of customer lists? (See "Dangerous Liaisons," *CIO*, Feb. 15, 2000.) All she has to do is tell her new employer about the company's distribution plan or secret technology that cuts valuable hours out of the production process. Or, worse yet, post that information on the web out of spite and revenge. Then the secret is spoiled forever, and with it the employer's competitive advantage or even survival.

Trade secret law attempts to strike a balance between protecting a company's intellectual assets and an employee's right to change jobs and benefit from knowledge amassed by working in a particular industry. Many state courts refuse to enforce contracts between the employer and employee that say the employee cannot work for a competitor for a certain time period after leaving the company. Many companies rely on "noncompete" agreements without realizing that they are often unenforceable. Consider the example of *Baxter International v. Morris*. In that case, a research scientist for Microscan Systems signed an employee agreement prohibiting him from working for a competitor for one year after terminating employment with Microscan. He quit, and immediately began working for Microscan's only competitor, Vitek Research.

While the lower court enjoined Morris from disclosing any trade secrets for a year, it refused to block him from joining Vitek. In other words, Vitek got its key employee and had to wait only a year until Morris could spill the beans with complete immunity. When courts do enforce noncompetes, they generally only permit them to last for one year for the sake of the employee's livelihood. The duration is much shorter in the internet industry because the technology changes so fast, says Carbone—possibly as short as a week or two.

Another problem with noncompetes is that they are very expensive. "Employees rightfully resent being told who they can and cannot work for," says Julia Mahoney, associate professor at the University of Virginia School of Law. "You'll have trouble recruiting if you ask people for something that's not commonly done in the industry, unless you're willing to pay them 20 percent above the market rate."



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By comparison, confidentiality or nondisclosure agreements between employers and employees usually are enforceable, and are an effective way to protect trade secrets. They force employers to identify their trade secrets, and put employees on notice. "Otherwise, the employee may make an unauthorized disclosure to a competitor without even being aware that it's a trade secret," says Halligan. Identifying a trade

the company knowingly stole trade secrets, it and the loose-lipped employee can be held criminally liable under the 1996 Economic Espionage Act. The Act makes it a felony to steal or communicate a trade secret without authorization, with penalties of up to \$500,000 and/or 15 years in jail for individuals, or \$10 million for organizations. The offenders will probably have to be aware of the fact that they're stealing trade secrets to

Gatorade brands. The Court said that Redmond could not help but rely on Pepsi's marketing plan when formulating that of Quaker Oats. "Unless Redmond possessed an uncanny ability to compartmentalize information, he would necessarily be making decisions about Gatorade and Snapple by relying on his knowledge of [Pepsi's] trade secrets," said the court. Thus, it enjoined Redmond from assuming any duties with Quaker relating to beverage pricing, marketing and distribution for the duration of Pepsi's marketing plan—approximately one year, during which time Redmond was an extremely expensive ornament.

CIOs and all other executives need to be extra sensitive to trade secret law because they could be held personally liable for failing to take reasonable measures to protect a company's secrets, says Halligan. This theory has yet to be tested in court, but the signs indicate that courts are moving in this direction. "Executives are responsible for protecting the physical assets of a company, so why not also the intangible intellectual assets?" says Halligan. "The law is just starting to develop. I think you'll start to see shareholder suits and liability where the court finds no trade secret protection of a company's key assets, [causing] the company to lose significant value."

The moral of the story? Call a lawyer. There are some things only attorneys can do. For example, only attorneys specially admitted to practice before the PTO can submit companies' patent applications. Should a company be challenged and found guilty of trade secret or patent infringement, it will be inoculated against extra punitive damages if it can show that it acted on the advice of an attorney. More generally, the intellectual property landscape is so uncertain that it seems that only the people who helped make it so are suited to navigate it. But it may just be the smartest \$500 an hour that your company could ever spend. **CIO**

Former CIO Senior Writer Jennifer Bresnahan is now a student of law and contributing writer. Send your feedback to letters@cio.com.

Companies can run afoul of the law even if they have no intention of using or stealing trade secrets.

secret is as simple as a manager or executive declaring it is secret. There is no legal aspect in the identification process; lawyers come in to draft contracts that will prevent employees from stealing those secrets.

Companies should organize their processes so that secrets are disclosed to employees on a need-to-know basis. For example, if a company's competitive advantage comes from a relationship with an inexpensive supplier, the company should code all communications with the supplier so that few employees know its identity.

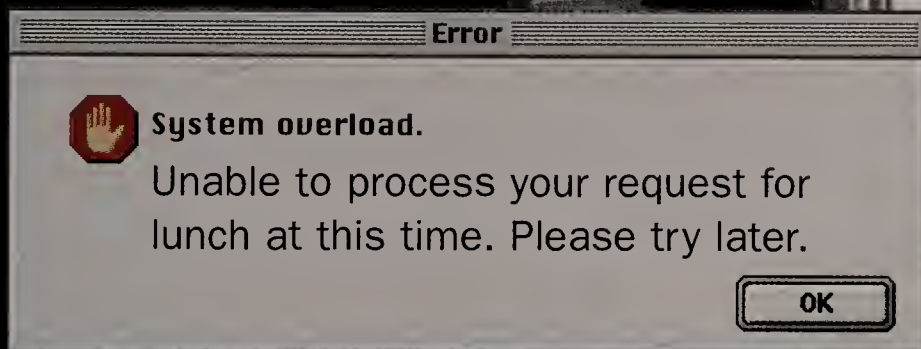
You Can Know Too Much

Keeping defectors from stealing trade secrets is only one aspect of trade secret law that executives must be aware of. Knowing how the law affects hiring decisions is equally important. Companies hiring competitors' employees will find themselves paying a lot for a temporarily worthless employee because he is blocked from sharing the specialized knowledge for which he was hired. More distressing than that, the company could lose a ton of money. It might be ordered to hand over all profits made from its use of a misappropriated trade secret. If

be held liable. And the offense will most likely have to be very obvious. But as with all law in this rapidly changing area, it is impossible to say with certainty that an executive who is merely stupid or ignorant, as opposed to a vicious lawbreaker, will be completely safe from the punishments described in the statute.

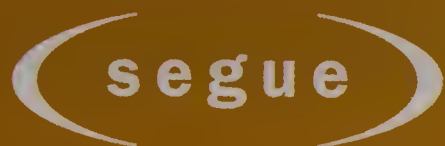
For companies, however, stupidity and ignorance is never an excuse. Companies can run afoul of the law even if they have no intention of using or stealing trade secrets. If an employee is hired because of her specialized knowledge, the courts assume she will not start at page one. Rather, she will probably use the knowledge gained in her former job. "Intent is not the issue," explains Halligan. "The court will find it inevitable that [she] will disclose the trade secret."

That's exactly what happened in the first case to recognize this "inevitable disclosure" doctrine, *PepsiCo. v. Redmond*. In 1995 William Redmond was an employee of Pepsi who helped prepare the company's secret marketing plan for its All Sport beverage. Redmond then took a position with Quaker Oats that entailed developing the marketing program for its competing Snapple and



Business would never let it happen. Neither should e-business.

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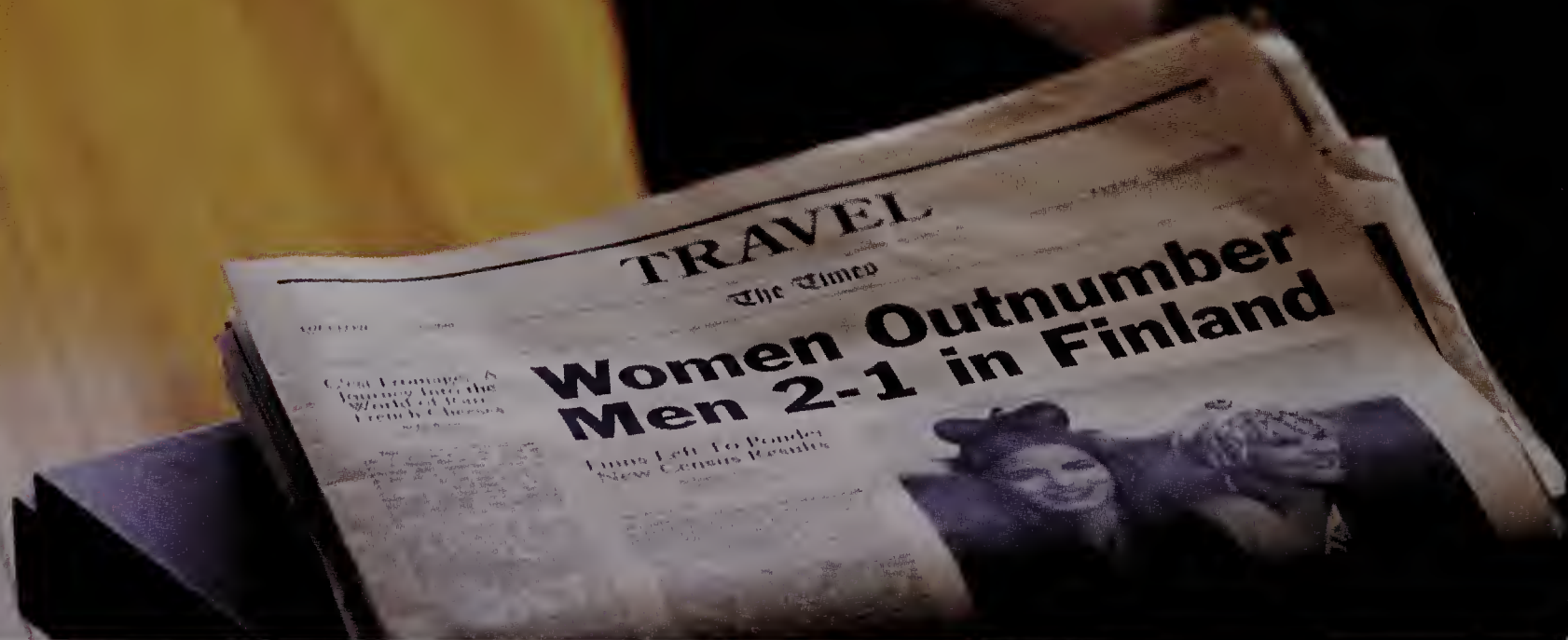
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After pledging to annihilate each other's internet e-commerce exchanges, Ford and General Motors lowered their swords and decided to work together to build the world's biggest online bazaar. The payback could be enormous—but so could the problems.

Learn

- ▶ How auto suppliers influenced the big OEMs, for a change
- ▶ What the world's biggest supply chain stands to gain—and lose—from e-commerce
- ▶ Why CIOs in all industries must get an exchange strategy—now

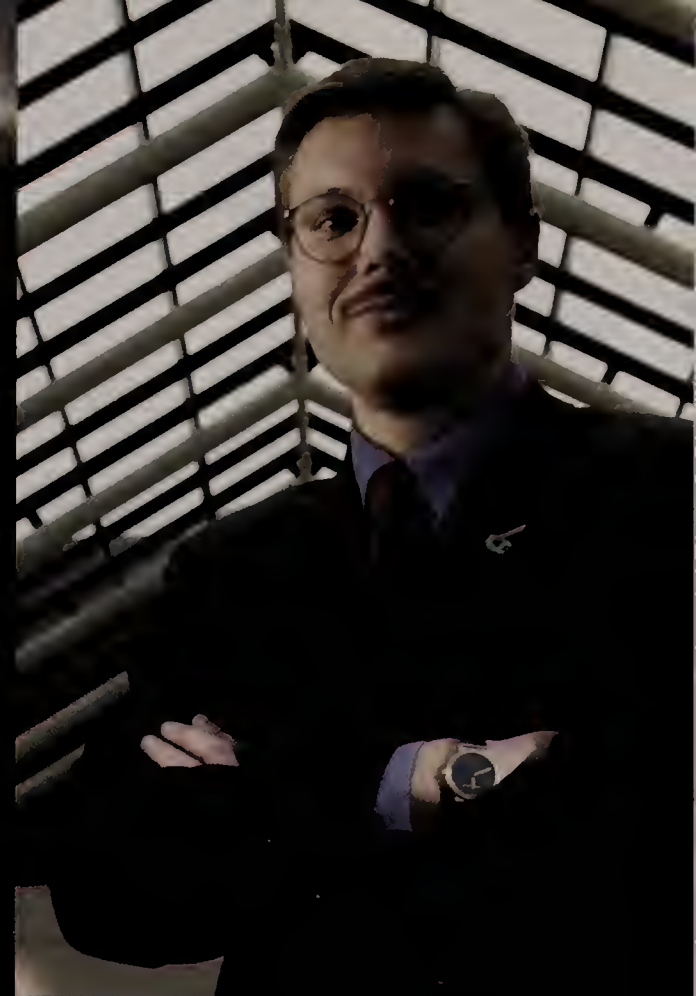
B • *the* Biggest

BY LAUREN GIBBONS PAUL

Crash

PHOTO RIGHT BY MARC BERLOW; TOP RIGHT BY KRISTA HUSA/DETROIT JEWISH NEWS; BELOW BY JON MURESAN





After battling each other for online bragging rights, Ford's Mark Duhaime (left) and GM's Harold Kutner (below) became e-commerce buddies and even invited DaimlerChrysler's Peter Weiss (above) along for the ride.

le
yet



harold Kutner, lord of the world's biggest supply chain, has received a few unexpected wake-up calls over the last few months.

The first came last Nov. 3 at 3 a.m. local time in his Tokyo hotel room. Frantic General Motors PR people called to say that his main rival, Ford, had just announced a new business-to-business e-commerce website designed to wrest control over the auto industry's 30,000 suppliers from GM. Furious, and certain that Ford was simply trying to trump the announcement of his e-commerce site scheduled for later in the week, Kutner, GM's group vice president of worldwide purchasing, wiped the sleep from his eyes and ordered GM's PR troops to reschedule its press conference for that day. It was hyper-competitive business as usual in Motor City.

PHOTO BY KRISTA HUSA/DETROIT JEWISH NEWS



GM's Harold Kutner calls the Big Three e-commerce relationship an "unnatural marriage."

B-to-B E-Commerce

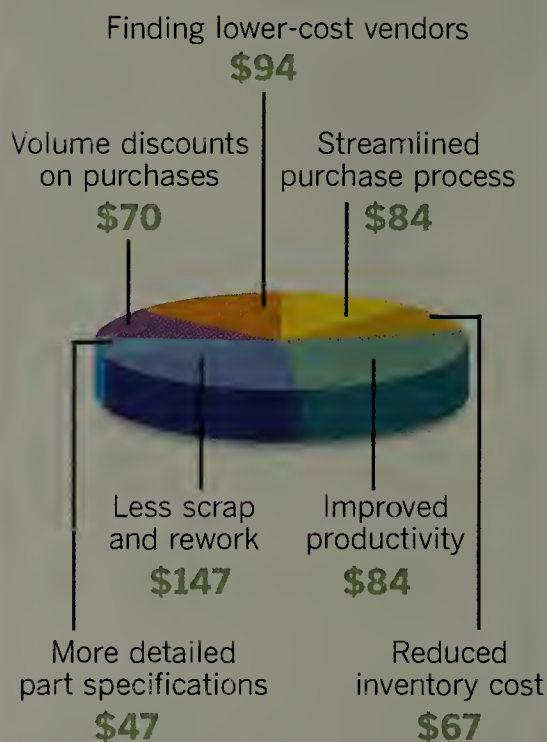
The second call came after Kutner had already spent millions on software, infrastructure and a technology partnership with e-commerce wunderkind Commerce One to build his supply chain juggernaut. Suppliers would piggyback on GM's purchasing power to save money on everything from raw materials to pens and pencils while he took a cut of the action. This time the call wasn't from headquarters, however; it was from frantic suppliers that did business with all of the Big Three automakers.

Why, they asked, were Kutner, along with his arch rival at Ford, vice president of e-commerce Brian Kelley, and DaimlerChrysler's Peter Weiss, project manager of E-Extended Enterprise, all building proprietary exchanges on the largest open network in the world? How would a supplier save any money by having to build three separate versions of the same commerce technology in order to do business with the Big Three? How indeed.

Perhaps it was the clicking over of the millennium, or maybe it was the realization that e-business is going to be different than old business. But in late February, Kutner and his rivals took a deep breath, adjusted their ties and sat down next to each other at a joint press conference to announce that they were abandoning plans to create proprietary trade exchanges in favor of a single trading sanctuary. The sight of top managers from the most competitive companies on the planet holding hands and singing Kumbaya was startling, to say the least. Kutner even called the agreement an "unnatural marriage." And it wasn't just the rival automakers who were getting cozy. Execs from Oracle Corp. (Ford's technology partner) and Commerce One—sworn enemies just a few weeks before—were on hand to coo

Auto Suppliers Can Cut Their Costs by Going Online

Total savings per vehicle: \$695



SOURCE: GARY LAPIDUS' E-AUTOMOTIVE REPORT, GOLDMAN SACHS INVESTMENT RESEARCH

about newfound synergies in what will be a joint venture of the Big Three and their respective technology pals.

But such turnabouts are natural when so much money is at stake. Newco, as the joint venture is temporarily known, will have a potential market capitalization of between \$30 billion and \$40 billion once it goes public, with annual revenues of about \$3 billion, estimates The Goldman Sachs Group Senior Analyst Gary Lapidus. The prospect of being part of the world's biggest internet company quickly quelled the animosities, adds John Sviokla, vice chairman of Diamond Technology Partners, a Chicago-based e-commerce services firm. Diamond was called in to help Commerce One and Oracle hammer out an acceptable technical architecture. "Everyone at the table understood that this is the largest deal in e-commerce history by a factor of about 100," says Sviokla.

But this wasn't just about getting in the record books. The economics of the tripartite exchange proved to be significantly better than going it alone (see the graphic on Page 156). The sheer size of the exchange will help the partners attract an ever-widening pool of car manufacturers, as well as commercial vehicle manufacturers, to join in on the venture. "The three-way exchange is a big idea because it becomes the predominant exchange for the space. Other OEMs are just going to fall in line," says Lapidus.

Indeed, some other major car manufacturers have already taken the bait. Renault SA and Nissan Motor Co. are among the first; Toyota Motor Corp. is in talks with the Big Three. Deals, alliances and intercorporate ego smoothing that would have taken years not too long ago are taking weeks now. This deal signals that e-commerce has truly arrived, and it's more about finding the best supplier for metal stamping presses than bidding for vintage *Charlie's Angels* posters on eBay. "The [auto exchange] is a watershed for all industries," says Bob Ferrari, senior analyst



Ford's Thunderbird will be built from portal parts.



Don Pettini,
Chief Technology Officer
MotherNature.com

“

It's not nice to crash

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†Source: PC Data, June 1999



Chevrolet's Triax concept car could be customized over the web.

for supply chain management at AMR Research, a Boston-based market research company.

And if the hype were to translate into a truly efficient new way for the auto OEMs to exchange goods and information with their suppliers, it would make the last computerized supply chain "miracle," electronic data interchange, seem like child's play. That's a pretty big if, though. Whereas getting suppliers onboard was the biggest challenge facing Ford and GM in their solo exchanges, now the greatest hurdle will be knitting together the disparate cultures of the three partners as well as the disparate technology solutions from Oracle and Commerce One. The details have not yet been worked out, but hooking suppliers' back-end systems to the exchange will be far from plug-and-play. And this great idea won't be worth a damn if the exchange is still being spoon-fed with manual business processes a year from now.

But even if the auto exchange stalls, the internet's destiny as an online business bazaar will not. Exchanges are coming to your industry and will soon affect your life, says Diamond's Sviokla. "Every CIO needs an exchange strategy," he says. "Exchanges will have an influence on price, service and delivery in every industry. CIOs need to decide what role they're going to play." Mining the brief but brilliant history of the auto exchange for clues is not a bad place to begin.

SWINGING A BIGGER STICK

The two-pronged goal of the auto trade exchange is to cut costs by streamlining the purchasing process while letting suppliers pocket savings by leveraging the automakers' buying power for additional discounts. That buying power is significant. GM spends \$85 billion per year with its suppliers, according to Kutner. Ford's tally is \$80 billion and DaimlerChrysler's is \$73 billion. Such clout should allow the Big Three's suppliers

to save big. "[The exchange] is an opportunity for a lot of suppliers—both large and small—to have the ability to buy, sell and auction at volumes they never dreamed were out there," says Kutner.

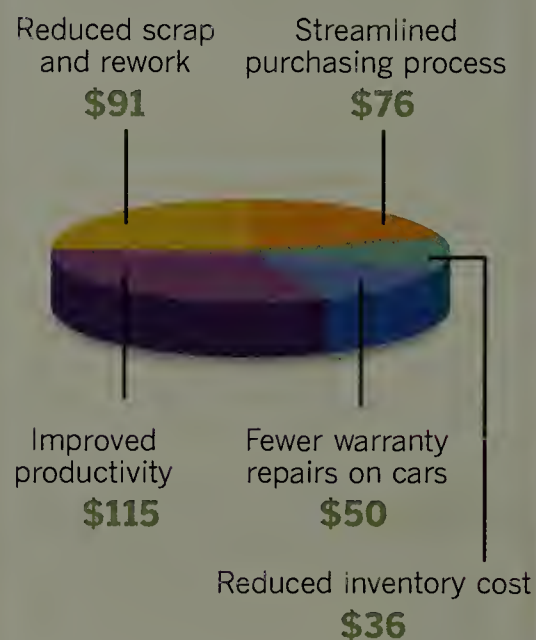
The automakers also want—and need—to get closer to consumers, sending information about their preferences (such as color and options) to everyone in the supply chain in real-time so that customers get exactly what they want—not just what's on the lot. "We want to get into an environment of sensing our requirements versus ordering and stockpiling [supplies]," says Kutner. "The key is we want to communicate requirements to our supply base much faster. That will allow us to provide our customers with more customized vehicles."

By 2001, Kutner expects GM to reduce the time it takes between receiving an online car order to delivery of that vehicle—from about 45 days to 10 days. The idea is that superfast communication on the availability of and demand for parts will cut much time and money out of the process.

Ironically, the partners in the joint venture won't have to rejigger their individual strategies to create the new exchange. Their plans, broadly different at the beginning of the exchange wars, had been rapidly converging for months. GM's TradeXchange initially focused on electronic purchasing; its choice of Commerce One of Walnut Creek, Calif., as a partner reflected that emphasis. Ford, on the other hand, originally envisioned its "auto-xchange" as going beyond procurement to broader initiatives such as advanced planning

Auto Manufacturers Save Less Online Than Suppliers, but Gain More Power

Total savings per vehicle: \$368



SOURCE: GARY LAPIDUS' E-AUTOMOTIVE REPORT, GOLDMAN SACHS INVESTMENT RESEARCH

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and scheduling, demand forecasting and design collaboration. Ford's partner, Oracle of Redwood Shores, Calif., was perceived as more adept at supply chain management.

But within a few weeks of the announcements, GM subtly altered its strategy to be more like Ford's. GM partnered with i2 Technologies to add the supply chain management piece. And GM quickly adopted Ford's goal of eventually web-enabling the entire automotive production process, from ordering production materials to forecasting future demand to making cars directly to consumer

spec. Suddenly, the exchanges appeared to be identical in scope. "As we came out of the gate and ran for the last couple of months, you could see that our strategies were becoming more and more similar. That was a factor [in combining the exchanges] too," says Ford's Mark Duhaime, director of program management.

In the short term, the most important objective for the common exchange is to reduce work-in-progress (WIP) inventory—that is, production materials waiting in the supply chain to be used. Today, auto suppliers and manufacturers are forced to stockpile materi-

The Mice That Roared

Auto suppliers are used to doing things the Big Three's way. On e-commerce, however, they said no way.

Surprise: The automakers actually listen to their suppliers' concerns. In the biggest man-bites-dog story in recent memory, the Big Three car companies dropped their plans to achieve world dominance via separate trade exchanges and came together to collaborate on a single platform. The reason? Auto industry suppliers cried out at the folly of implementing and supporting multiple disparate systems.

"We listened to our suppliers, and this is the outcome," says Peter Weiss, project manager of e-extended enterprise for DaimlerChrysler. "There's been a history of the suppliers dancing to the OEMs' tune. But we want to build true partnerships with our suppliers," adds Mark Duhaime, director of program management for Ford, in Dearborn, Mich. "This is walking the talk, basically. If we're telling the supply base that this is good for them, we can't give them a model that drives inefficiencies."

As in any industry, the auto OEMs set the pace for their suppliers. In the 1980s, the Big Three decreed that their suppliers would have to conduct transactions over electronic data interchange (EDI). For the

companies that made mirrors, mufflers and mud flaps, there were upfront investments to be made, business processes to adjust and new technology to learn. The suppliers did it all and moved on. And when the OEMs demanded ever-greater price reductions, the suppliers complied with that too, never knowing where tomorrow's price cuts would come from.

Although they won't have to contend with multiple exchanges, suppliers still worry that the new e-marketplaces will turn out to be just a fancy new way to beat them up on price. The detailed transaction data gleaned from suppliers buying

their raw materials through the sites and selling their own wares to Ford, GM and DaimlerChrysler has the potential to give the automakers greater insight than ever into supplier cost structures. This could lead to much greater pressure to demand price cuts. Suppliers would be well within their rights to be skeptical.

Notwithstanding the Big Three's turnabout on the exchange, "there's not a lot of two-way communication there," says Bob Ferrari, senior analyst for supply chain management at AMR Research, a Boston-based market research company for the manufacturing industry.

Ford's Th!nk neighbor electric car symbolizes the Big Three's urge to get new models to market quickly.



als—and pay the associated storage costs—to cover any sudden changes in requirements—such as a particular model selling much more than predicted, for example. WIP costs the North American automotive supply chain \$49 billion annually, which translates to an inventory carrying cost to the consumer of about \$310 on every new vehicle sold, according to Goldman Sachs' Lapidus. The ability to communicate better information faster throughout the supply chain—the theory says—will go far in whittling that number down. In fact, Lapidus estimates North American automakers and suppli-

ers can reap a potential back-end cost reduction of \$1,065 per vehicle, or 6 percent of the manufactured car cost, from these supply chain initiatives (see graphics on Pages 148 and 150).

THE FINE PRINT

The potential for Ford, GM, and DaimlerChrysler to reduce internal costs and speed processes with the trade exchange is clear. What isn't clear is whether three large car companies have any natural affin-



The Big Three changed their tunes when “we listened to our suppliers,” says DaimlerChrysler’s Weiss.

Join the Feast—Or Become Dinner

Suppliers still question whether the cost savings auto execs are talking about will get swept away in the next round of price cuts. A manager at a Big Three steel supplier (who requested anonymity) is nervous, but unlike most of his fellow suppliers, he's jumping in feet first. Although he wonders if he'll ever see a penny of cost savings, his company has volunteered to be one of the first users of the

exchange. “We don't have a clue what this thing is going to mean, but we figure the longer we wait to find out, the worse it will be. We want to get in there and try to steer this thing to our advantage,” he says.

Being proactive should pay off for suppliers, believes The Goldman Sachs Group Senior Research Analyst Gary Lapidus. “The suppliers are already on the hook to deliver price reductions—that's just a fact of life,” he says. “At least [the exchange] might give them a tool to take out costs so that they can deliver lower prices without further pinching margins—that lemon has been squeezed.”

A 30-year industry veteran, the manager at the steel producer worries that if price becomes king on the exchanges, other important supplier traits such as execution, reliability and knowledge—all the things he's worked to build into his relationship with the automakers for the last 30 years—will fall by the wayside. He'd rather work on ways to shore up the relationships now rather than later.

The steel manager is accustomed to influencing both the OEMs and his fellow suppliers. He has worked with the Big Three executives on the Automotive Industry Action Group's Automotive Network eXchange (ANX) effort for the past four years. ANX provides a highly secure common network infrastructure to connect auto industry trading partners, allowing them to collaborate on product design and development, automating order processing and facilitating just-in-time manufacturing. He's hopeful that ANX will be one path of entry to the auto exchange.

“ANX will be part of this,” affirms Duhaime. “Once you decide to take part in the exchange, depending on size, there will be choices about whether you want to use ANX as the transport mechanism. If you're going to be sending tremendous amounts of very secure data, ANX makes perfect sense. But if you're a tier 5 supplier using the exchange to buy lightbulbs and pencils, ANX is overkill.”

In any case, the steel supplier is incredibly relieved that the automakers have decided to give their suppliers a break. And he doesn't think Ford and GM lost face by beating up on and then just as rapidly embracing each other. Says he, “They've stopped throwing sand in each other's faces. I think it's a sign of maturity.”

—L. Gibbons Paul

ity for becoming deal brokers and transaction managers. “[The Big Three have] never shown they can excel at anything other than making cars,” says Laurie Orlov, research director for eBusiness applications at Forrester Research, a market research firm in Cambridge, Mass. “Being a buying service sounds good. But who’s responsible if the transaction goes wrong? What if the suppliers’ suppliers aren’t online? Something this intergalactic will be very hard to make succeed.”

The Big Three’s gamble to corner the market on automotive parts needs a supplier payoff to be successful. But the savings promised through aggregated buying power could easily be lost through increased computing infrastructure costs and bureaucratic snafus (see “The Mice That Roared,” Page 152). As with trading exchanges in other industries—Sears, Roebuck and Co. and French retailing giant Carrefour’s new joint exchange primary among them—Newco’s long-term benefit for suppliers remains sketchy. “What we have is a bunch of me-too companies that think they can get something in return for providing aggregated buying power for their customers. But this is unproven,” says Orlov. The three-way exchange exists today largely in the realm of press conference and press release. Most

Ford and GM think they can get something for providing aggregated buying power to suppliers. But this is unproven.

—Laurie Orlov, research director for eBusiness applications, Forrester Research

nitty-gritty issues have still not been worked out, says Orlov. These include who will be responsible for customer service for transactions among suppliers, as well as how suppliers will e-enable their catalogs and transmit purchase orders. There is a very real danger that the suppliers’ purchasing process will remain largely paper-based, says Orlov. “I could see them saying they’re trading online but then [the suppliers are] all faxing, calling and printing behind the scenes. There are so many technical details to be ironed out.”

The financial details are equally unclear. One possibility is for the Big Three to take a cut of up to 1 percent of any third-party transaction conducted on the exchange (though this could be problematic since many auto suppliers operate on margins of only 2 percent). Another option is “value-based pricing,” where Newco gets a portion of any cost savings from the transaction. However if the fees work, they could quickly add up to some serious money.

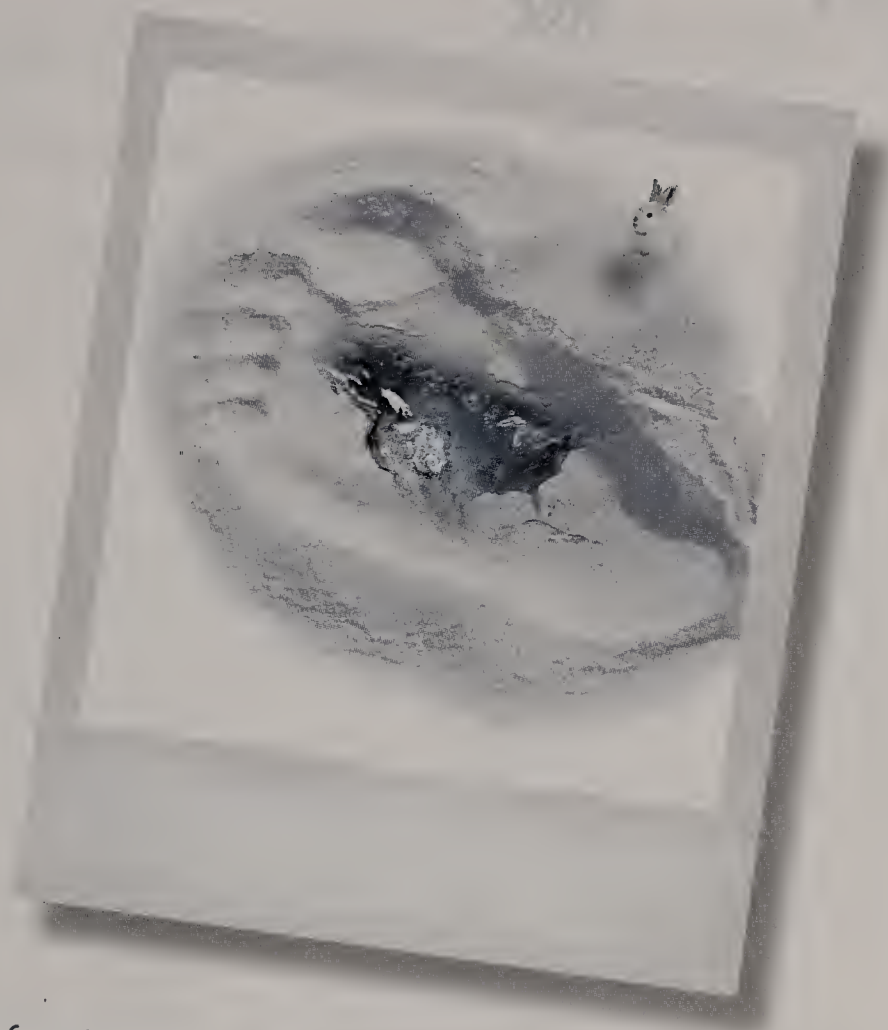
TECHNOLOGY PARTNERS

The joint venture has clearly shaken up Commerce One and Oracle, which are no longer top dog on separate projects but uneasy partners. According to Diamond’s Sviokla, the new technical architecture will leverage Commerce One’s exchange technology and Oracle’s enterprise application software. (Additional architectural details have not been released.) The official word is cheerful, but Oracle officials must be smarting at this turn of events. Oracle, after all, has been pushing its own exchange technology for at least as long as Commerce One has been around, and now it is being relegated to the decidedly less glamorous world of supply chain forecasting and back-end processing.

Meanwhile, DaimlerChrysler has reserved the right to bring



Offering more customized options on hot-selling trucks is a goal for GM.



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“It was nice having the competition, something to get behind, to tell you the truth. Now we have to figure out how to start swimming together as a team.”

—Mark Duhaime, director of program management, Ford

in its own partner—SAP was widely speculated to be the premier candidate at press time, although DaimlerChrysler's Weiss declined to comment. One wonders how many large companies can be involved in this effort before it deconstructs into a bureaucratic morass. “The opportunity for conflict has been multiplied by an order of magnitude,” says Orlov.

In any case, the companies are searching for a CEO for Newco from outside the three organizations. This is critical, says Orlov, since the decision-making process must be clear-cut. “The third party will have to override dissension and make decisions. It's going to be very difficult. [Unlike most CEOs,] this CEO won't have a four-walled environment over which he has complete control,” she says. Goldman's Lapidus likens the job of Newco's CEO to “herding cats.”

Establishing an autonomous organization will not be easy. “Now we have to find a common rallying cry,” says Ford's Duhaime. “It was nice having the competition, something to get behind, to tell you the truth. Now we have to figure out how to start swimming together as a team.”

THE ROAD AHEAD

If the past few months are any indication, the OEMs will waste no time getting the exchange on its feet. Duhaime expects the first revision will be up near the end of April. The exchange will have advanced functions such as capacity planning, demand forecasting, production planning, supply chain transaction automation, financial services and

logistics. In the meantime, Ford and GM will continue to offer catalog purchasing, bidding and price quotes, online sourcing and auctions on their respective exchanges.

Still, the auto execs were quick to point out at the February press conference that they are still competitors—the whole world hasn't gone soft, after all—and they will each use the exchange differently. “Each company will have its own separate purchasing strategy and will result in us each using the exchange slightly differently,” says Weiss. “For us, if it's about procurement alone, the payoff won't be big enough. We need to facilitate communications with all of our

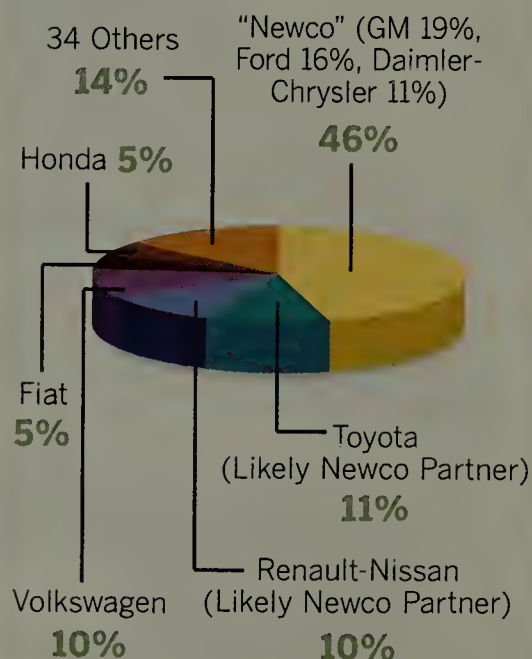
suppliers—not just the tier ones—and become faster in our product development cycle.” But each has pledged to route all its purchasing through the exchange. In dramatic fashion, the stodgy Big Three automakers are taking the decidedly new-world step of becoming e-commerce pioneers. Like most pioneers, however, they are making most of it up as they go. Automotive suppliers may be the vanguard for the relentless commoditization and pricing pressure that electronic commerce will eventually bring to many industries' now-comfortable profit margins.

Meanwhile, delays, technology snafus and data incompatibility problems await all involved. This is the first step down a long, hard road for which none of the partners has a reliable map. Says Forrester's Orlov, “Everyone wins if they can pull it off, but there's a lot to pulling it off.” **CIO**

Do you see flaws or strengths in the auto exchange strategy? Send your thoughts to CIO Executive Editor/Investigations Christopher Koch at ckoch@cio.com. Lauren Gibbons Paul, a freelance writer based in Waban, Mass., can be reached at lauren paul@mediaone.net.

By Partnering, the Big Three Achieve Dominant Purchasing Scale

World purchasing share
by company



SOURCE: GARY LAPIDUS' E-AUTOMOTIVE REPORT, GOLDMAN SACHS INVESTMENT RESEARCH

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500% less reflection*
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for improved efficiency

**Over 300% better
brightness uniformity***
for consistent, true-to-
life images

**Over 300% higher
contrast ratio***
enhances legibility
and fine detail

Over 85% less glare*
for less eyestrain,
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image sharpness***
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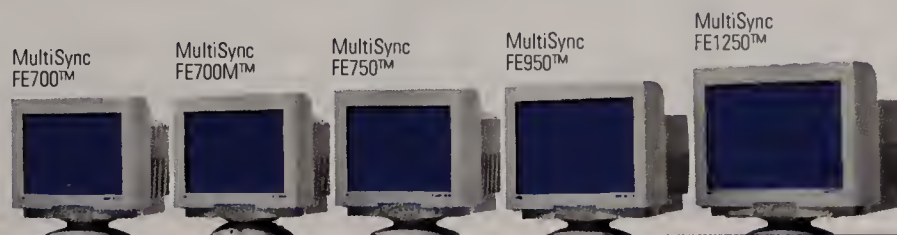
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The Future of Wealth

The internet changes everything about wealth, including the ways we measure it

B

ROWSE THROUGH EBAY'S BIDDING WARS and you'll learn more than just the asking price for a Birthday Party Barbie or a Babe Ruth baseball card. The site's 2-million-plus auctions a day offer a quick lesson in one way the internet is reshaping our economy—namely, by making it possible to set up an efficient market for just about anything. In a new book, *Future Wealth* (Harvard Business School Press, April 2000), authors Stan Davis and Christopher Meyer take a far-reaching look at how the internet is fundamentally changing the nature of wealth. Davis is a well-known business futurist and author of 10 books, including another book with Meyer, *Blur: The Speed of Change in the Connected Economy* (Perseus Press, 1998); Meyer is director

of the forward-looking Ernst & Young Center for Business Innovation in Cambridge, Mass. As one might expect, this future-oriented duo foresees changes that have ramifications far beyond plastic dolls and baseball cards.

Among those changes, Davis and Meyer envision a time when efficient markets are developed for just about everything, including the connected economy's most scarce and precious resources: human talent and intellectual capital. In other words, one day we could be trading the talents and capabilities of doll collectors and sports memorabiliaists, even CIOs, on markets that have all the characteristics of capital markets for financial instruments, such as futures, derivatives and hedges. Davis and Meyer also expect individuals and businesses to adjust their attitudes toward risk: Rather than viewing risk as a problem to be avoided, they will begin to see it as a financial opportunity. The authors recommend that businesses develop risk-taking cultures and even think about establishing strategic risk units to help them manage, measure and trade their risks. "A company that won't take risks is taking the biggest risk of all," they write.

When there is a seismic shift in the foundation of the economy, there needs to be an equally radical shift in how we measure wealth—a shift that has huge implications for CIOs, the chief stewards of their organizations' information. Davis and Meyer explore that shift in Chapter 12 of *Future Wealth*, "From Past to Future: Measures that Matter," excerpted below.

—Sari Kalin, CIO senior editor



Future Wealth

By Stan Davis and
Christopher Meyer

Harvard Business School
Press, \$27.50, April 2000

Measure the Future

Professional investors will tell you immediately that the way they value a company is to look at its future—specifically at the discounted future cash flows—and they do so all the time. A company should take the same approach in looking not only at itself but also at everything that impacts it, including competitors, suppliers, customers and the business it does.

Now that we're accustomed to paying \$100 a share for internet startups that don't anticipate profits this side of Judgment Day, the future orientation seems obvious. Yet the systems that companies use to measure and manage their performance are still locked onto the rearview mirror.

In part, they're prisoners of their auditors, and if you use the same measure, you, too, will value a company by what it has amassed in the past. Value it by income, as security analysts do, and you are valuing it close to

the present. Value a company by its growth potential—where it is going and at what rate of acceleration—as venture capitalists do, and you are valuing it on its future. You're also taking a greater risk. But in future wealth, risk is a good word. No wonder the most hotly desired companies in today's markets, those with the highest price-earnings ratios, are the likes of Amazon, Yahoo and eBay.

The enormous multiples that these fly-by-tomorrow-night companies enjoy infuriate the disciplined managers who consistently generate strings of single-digit quarterly earnings increases at the 30 companies that comprise the Dow Jones Industrial Average. They learned to believe that managing current performance creates value, but now investors are parting ways with this dogma. They place much greater value on promising future markets.

Companies need to make the same mind-

set adjustment. This means that their perception of the future—its direction, its opportunities—should dictate how they manage. In every corporation we have seen, such perceptions are discounted because the information on which they are based is uncertain. To bet your capital on uncertainties would surely be seen as overly risky at some of the Dow companies. That's why their capital budgeting systems are designed to present returns as if they were certain.

Measure Intangibles

Not surprising, corporate measurement systems are based largely on what you can see: units in inventory, number of customers, bills payable, the replacement cost of a drill press, bank debt, the age of a steel mill, dollars. When the auditors prepare a balance sheet, they put a value on what they can count. But how do you count brand, capacity to innovate, quality of management, potential,

relationships, knowledge, human capital?

Some answers are beginning to emerge. Companies are beginning to get a handle, for example, on the value of their brands. Sophisticated market research techniques allow the likes of Bell Atlantic and MicroAge to learn just how much more—or less—a given product is worth if it carries their name. This can be substantial. “I’d like to buy the world a cola” doesn’t

have the same selling power as the branded, “I’d like to buy the world a Coke.” At the other extreme, we know of no means of putting a value on relationships, though researchers are beginning to codify and quantify

moreover, the measurements and the changes are likely to be at the tail end of a drawn-out cycle that begins with the gathering of information, its analysis, endless discussion and committee work, and often-ponderous executive decision making. Then come rollout, response, results and more fine-tuning. And, of course, once you finally reach the end of the cycle, you must begin it again.

Contrast this with financial markets, where the price of a stock can change in the space of a busy signal while you’re calling your broker and where whole sectors can tumble into near dust while you sleep. Such constant fluctuation remains the extreme, but we are all becoming accustomed to a world, in business and otherwise, in which connectivity-driven change is nearly continuous. It’s reflected in spot pricing, once the arcane domain of oil traders and other commodity traders, and now a part of everybody’s life. It’s almost bad etiquette these days



Value a company by its growth potential—where it is going and at what rate of acceleration—as venture capitalists do, and you are valuing it on its future.

social networks. But we do know they have value, because without them a company fails.

Even if you can’t yet measure all intangibles directly, the financial analysts have an implicit model that places value on them. Ernst & Young research shows that, on average, non-financial performance accounts for 35 percent of analysts’ valuations. If you want to know where you are over- and under-investing in intangibles, go ask those efficient financial markets. They’ll always find a way to take account of all available information and set a value on it. It’s an indirect feedback loop, but the most comprehensive one you’ve got. In the future, companies may produce simulation models of their markets to measure their intangibles.

Three things here: It’s no secret that intangibles are growing faster than tangibles. How to measure their value is still elusive. And third, the financial markets will figure a way.

Measure Continuously

One thing about measuring is very certain. It needs to be continuous. How often do you close the books, upgrade products, change prices, deliver or receive performance reviews and the like—periodically, quarterly, semiannually, yearly? In each case,

to ask the person next to you on an airline what he paid for his seat. The carriers change prices faster than you can figure out whether to even make the trip. Only those willing to pay a premium for the intangible value of complete flexibility pay full sticker price.

Continuous measurement is the way manufacturers control machinery. Since the 1970s, they have been installing real-time measurement and control systems to increase productivity and quality and to reduce labor costs. This same logic is inching into the intangible sector. Programmed trading and various circuit breakers are sensing devices. But they are reactive and limited. If we could install continual measurement and control systems in the intangible parts of our business, then we would also benefit from speed of reaction, improved quality and greater productivity. We’d also gain a set of tools that would help us manage risk. A stop-loss order controls the risk of losing money in a given security. What is the real-time intangible equivalent? If Sears had created a brand value measurement system in the 1960s, it could have reacted a lot quicker.

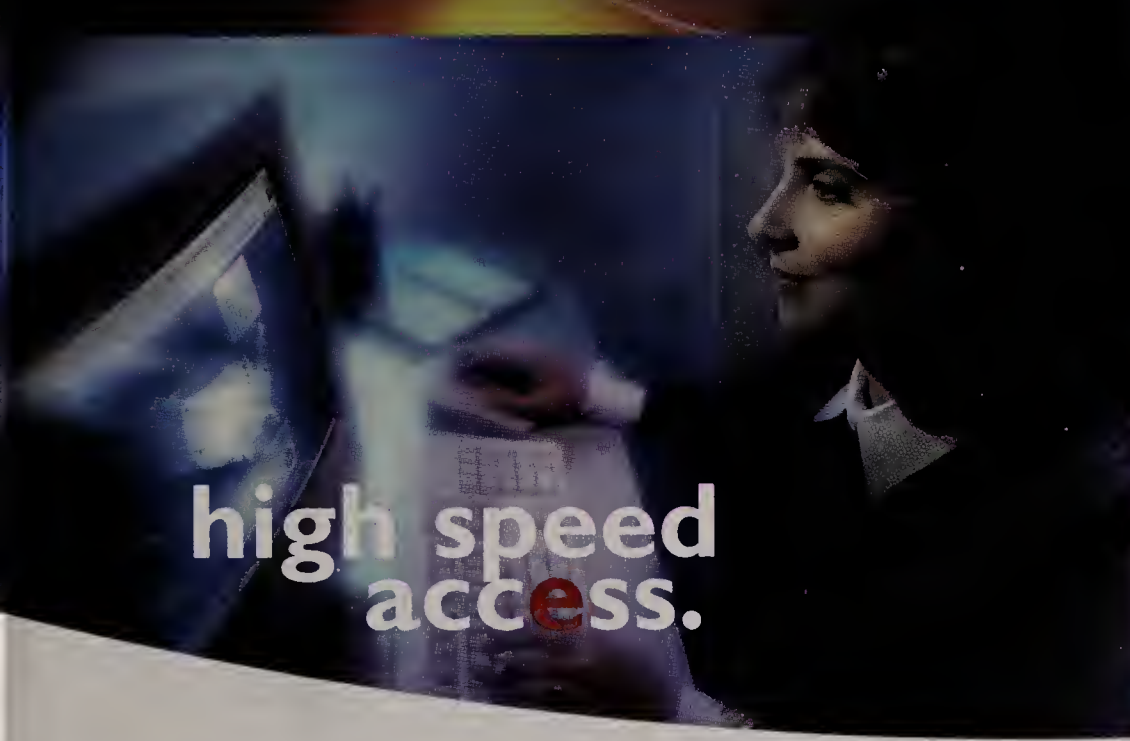
The movie industry comes close to continuous measurement. Always given to dailies—the end-of-the-day feedback loop for the director—studios now monitor the theater grosses every



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morning and make instant advertising and distribution decisions. Electrical utilities plug into online auctions for power, cruising North American and European grids and making real-time pricing decisions.

For continuous measurement, you first must increase the frequency of your traditional accounting-based measures. Cash flow, profits and the rest obviously continue to matter—no point planning for tomorrow if you haven't got a pulse today. How much longer, though, before the quarterly numbers become what annual statements already are—little more than archival documents? And how long will it be before weekly,

daily and even moment-by-moment numbers evolve, providing continual market feedback? Cisco Systems has already announced that it will be closing its books daily. Wal-Mart provides profit-and-loss numbers to department managers

to parents every six to 10 weeks. But just as an annual corporate report has almost no meaning to serious investors—the information is ancient history—so a child's grade that is based in part on a failed test taken 10 weeks earlier is of little value to either a student or a parent. A ninth grader is only 728 weeks old himself, so a 10-week-old grade reflects how he or she did 1.4 percent of a lifetime ago. If you're 50 years old, 1.4 percent of your life would be 36 weeks ago, a long time for recriminations or praise (though not unheard of in many organizations).

Imagine, though, a school where test grades are entered, not in a ring-binder gradebook, but on a teacher's ThinkPad, and from there transferred at the speed of light to a student's Personal Data Bank account. Absences and late days would go into the same account, along with commendations, referrals to the principal's office and anything else that might help paint a real-time portrait of a student's academic and social progress. Parents would be given a PIN so that they could use their own computers to access their children's account at any time. Yes, moms and dads could become awfully intrusive in their children's lives and in the affairs of the school. But then one



Continuous measurement

is the way manufacturers control machinery. They install real-time measurement and control systems to increase productivity and quality and to reduce costs.

at the close of business each night. Right there you have a vision of future wealth accounting.

Today's software and local area networks provide continuous measurement but only within an organization. In the real dimension, process industries such as chemicals and paper rely on instant measurement and real-time control systems to optimize their operations but have no such infrastructure for managing wealth. The financial sector comes closer because risk and the financial markets are their primary concern. Even so, no bank today can, say, close its books in real-time. Continuous measurement requires electronic connectivity outside the enterprise—to customers, suppliers and markets. Only then can we begin to manage wealth in real-time.

Public schools, for example, have long divided the academic year into arbitrary grading periods and deliver measure-

of the points of continuous measurement is that it enables you to meddle or, to put it positively, to fine-tune continuously.

Measurements that are continuous, intangible and future-oriented are essential underpinnings of future wealth. While this sounds a little like hearing the update of a hurricane warning every hour, the upside is the end of the tyranny of budgets that don't improve decision making and a relaxation of financial markets' overreactions to quarterly earnings. Since the ability to form a more robust and credible picture of the future distinguishes primates from lower mammals, perhaps it will help homo economicus reach a more balanced society. **CIO**

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The Marketplace Rules

CIOs need to run at the speed of the connected economy—or risk running their companies into the ground, says Stan Davis, coauthor of *Future Wealth*. CIO Senior Editor Sari Kalin spoke with Davis to find out how the theories in *Future Wealth* affect CIOs.

CIO: Do today's corporate leaders have what it takes to adapt to the radical economic changes you forecast in *Future Wealth*?

Well, we've got two generations of leadership in corporate America—and I

mean this more psychologically than chronologically. You've got the white males with white hair and suits who are 50 or older and who are hoping they can get through to retirement in time before things crash around them.

Contrast them with the twentysomething, purple-haired, body-pierced, roller-blading geeks who are issuing their IPOs and becoming millionaires and billionaires. This is hyperbole of course, a caricature of both extremes. But it is very, very difficult for these two types of leaders to talk to each other. They create fundamentally different corporate cultures. And it's very difficult for the old-style leaders to totally deconstruct the culture, management structures and ways of doing things that they've built up over decades in order to institute the new cyberspace approach.

Which generation do CIOs represent?

They represent the old type of leader. I make a distinction between the first and

second half of the information economy. In the first half, the computer was used as a crunching tool. In the second half, with the internet, everything is connected. Most CIOs grew up during the crunching era. So the very role of the CIO is going to end up fundamentally redefined [in the internet era]. It will be an essential role, but it's a very, very different one from what it was for the previous four decades.

What will change about the CIO's role?

The old model drew a circle: Inside the circle was the corporation, and outside the circle was the marketplace. But we are moving from the real to the virtual; we are moving into cyberspace. The internet is leading us to a connected world in which that circle is so permeable and so permeated that it is losing its efficacy to think of it as a boundary that distinguishes internal from external. And when you start erasing that boundary and mind-set, you begin to open the internalities of the company to operate by the rules of the externalities.

Externally, you're run by the economic laws of the marketplace. Internally, you're run by laws of power, status, psychology and corporate culture. The marketplace changes so fast that in order for a CIO's internal organization to change that fast, it has to operate by external economic rules, not by power, status and psychology.

How can CIOs run their IS departments by marketplace rules?

They have to set themselves up as a business, not just an internal transfer charge for services rendered. And they have to be competitive in the external marketplace. If they decide they're not good enough compared with the external marketplace, they ought to outsource. Let's say there's an IS capability that you're running internally. You're doing it as an overhead function, you're not doing it full time—by full time, I mean that to the corporation itself, it's a sideshow, it's a support function. If there are other people out there who do it full time and are best in class, outsourcing is a rational decision. Of course, some CIOs will build walls around their domain and hold out as long as they can, but they'll be a noose around the neck of the business. Then there are some CIOs who would say, "We can be best in class, therefore, we ought to offer it to the marketplace and not keep it only as an internal function."

So are CIOs good guys or bad guys here?

They can either be a negative force or an extremely positive force. And there are CIOs on both sides of that ledger. A lot of negative forces hang around in legacy corporations. It would be ironic that the CIO should become that.

—S. Kalin



When Asked, "Do You Really Know What IT Assets You Have?"

These guys got creative



I used
to know
who had
what,
really
I did.



I'm
pretty
sure
I can
find out,
I think.



Let me
get back
to you
on that,
OK?

... but this guy got informed
with our FREE CD.



I have all
the details
thanks to
InfraCenter for
Workgroups!



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it almost impossible to
manage and control all
your IT Assets.

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mid-range organizations, and sizable
departments of larger ones. And it
helps prevent wasting hard cash and
overloaded resources on *frequent hard-
ware and software upgrades, software
license non-compliance penalties and over-
due lease refresh fees* – to name just a few
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Like a growing number of businesses facing communication confusion, Trans-Form opted to toss in the towel and enter the relatively untried world of unified messaging. A unified messaging system integrates enterprise voice, e-mail, paging and fax resources, allowing employees to send, access and manage messages from a single point, such as a phone voice menu or a website. With main offices in Tampa, Fla., and New York City and more than a dozen consultants spread around the United States, Trans-Form decided that unified messaging would be a smart way to boost productivity and efficiency. "It seemed like a logical move, something that could really help us," says Winterstein.

Mobile Workers Gain the Most

After years of development and countless broken marketing promises, vendors are finally beginning to send unified messaging solutions into the business mainstream. Major telecommunications suppliers, such as Nortel Networks Corp., Cisco Systems, Hewlett-Packard, Lucent Technologies and Siemens AG, have started offering unified messaging products and services, primarily targeting organizations with mobile workforces. These giants have been joined by an array of startups, including Premiere Technologies, AVT Corp. and Vivao PLC, all looking for a foothold in a rapidly growing market.

Unified messaging has the potential to become an essential tool for mobile workers, says Roger Walton, a senior associate analyst in the Boston office of Ovum, a London-based technology research firm.

"When you travel, it really is a hard job keeping up

with your messages. Having a single phone number makes it easier to keep on top of messages and for people to reach you." But Walton isn't convinced that the technology makes as much sense for office-bound workers. "It's certainly convenient and nice to have, but not quite as vital."

Nonetheless, Ovum expects unified messaging to become nearly pervasive in the next few years, reaching into most businesses and even some homes. By 2006, three-quarters of businesses will use unified messaging technology. Meanwhile, more than a third of households in advanced countries will subscribe to telecommunications services that include unified messaging. IDC, a Framingham, Mass.-based research firm (and a sister company of CIO), forecasts that unified messaging revenues will explode from \$7.6 million in 1998 to \$1.9 billion in 2003.

Two Approaches

Unified messaging solutions come in two basic flavors: server-based offerings and subscription services. Server products integrate directly with an existing enterprise telephone system and network to provide unified messaging capabilities. Subscription services supply unified messaging functions for fees based on both the number of users and the scope of services provided. Both approaches typically allow users to search for messages either by phone or by visiting a personalized website from a desktop PC, notebook PC or personal digital assistant (PDA). Users can then select specific messages to play back or view. Most systems also provide a notification function that alerts users to high-priority messages via a pager or mobile phone. For callers, the technology means that a message left on voice mail or sent by e-mail or fax all have an equally good chance of being received by the recipient at the earliest possible opportunity.

Trans-Form was attracted to Premiere Technologies' pay-as-you-use Orchestrate service. The technology requires no up-

new products

Southpaws Welcome

Click with your left hand, or click with your right, **Microsoft** has a mouse that will work for you. The company has designed an ambidextrous version of its IntelliMouse Explorer, a "ball-free" mouse that uses an optical sensor (instead of a mouse ball) and a digital signal processor to detect movements. Since there's no mouse ball, there's no need to use a mouse pad, and the mouse can be used on almost any surface—even your pant leg. Called **IntelliMouse with IntelliEye**, the switch-hitting mouse is slightly smaller than its nonambidextrous cousin but still offers five buttons and a scroll wheel. The estimated retail price is \$54.95. For more information, call 425 882-8080 or visit www.microsoft.com.

Buddy Lists Mean Business

Instant messaging isn't just for fun anymore. **FaceTime Communications** has developed a set of applications that use instant messaging for business-to-consumer and business-to-business communications. **FaceTime Instant Groups** identifies a group of people by a single "buddy" name and routes incoming messages to the person in the group who is most available at the time. **FaceTime Instant Email** lets companies send



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front cost, only a monthly fee of \$29.95 per user (plus 15 cents per minute for toll calls dialed by Orchestrate). "I would say that it increased productivity by at least 20 percent," says Winterstein. "People are amazed at how responsive we now are. They don't expect to be able to find you at an airport, for example. When they do, they're amazed." An added benefit to the technology is that the business cards carried by TransForm's consultants now list only an e-mail address and one phone number, instead of an e-mail address and separate phone numbers for company, direct, pager and fax lines. "It makes for a neater, more effective card," says Winterstein.

Although service-oriented solutions are a good fit for many organizations, other firms may use server-based products to add unified messaging to an existing telecommunications infrastructure. For example, the Bellevue, Wash., branch of professional services provider EDS opted to go with CallPilot, a server-based unified messaging solution from Nortel Networks, allowing the office to retain its investment in an existing Nortel PBX system. "CallPilot enabled us to build onto an existing technology rather than switch-



tem, licensed for 25 desktop users, 25 fax users, 25 speech recording users and 1,000 voice mail users, cost \$31,000, plus a \$412.50 overall monthly maintenance fee. But early user feedback has been positive. "People are telling me it's making their lives a lot easier." In the meantime, King is rolling out the technology in stages, allowing users to become accustomed to a particular set of features before hitting them with something new. "We began with voice mail and then started adding fax and e-mail messaging." Coming next are speech recognition and voice menu features. "We're taking it step-by-step," says King. "That's the smart way to do it."

Challenges and Concerns

While few observers question unified messaging's long-term potential, some worry that a handful of nagging problems could at least temporarily hamper the technology's growth. Most critically, it's believed that implementation costs will deter many organizations from quickly adopting unified messaging. "Companies have all of their existing messaging systems in place," says Ovum's Walton. "Whether or not

EDS is rolling out the technology in stages, allowing users to become accustomed to a particular set of features before hitting them with something new.

ing to something entirely new," says Craig King, the office's telecommunications supervisor.

CallPilot is currently supporting about 150 workers in the EDS Bellevue office. Since the system has been operating for only a few months, King says it's too early to estimate cost savings, if any. The sys-

you're a Fortune 500 corporation, it is a very big deal to upgrade." Given the large upfront cost of a server solution, big enterprises are most likely to be the ones investing in that approach. EDS's King recommends that organizations choosing a server-based solution look into unified messaging solutions provided by their cur-

new products

direct marketing e-mails with embedded instant messaging links; when a customer clicks on a link, the customer is connected with a live agent. **FaceTime Instant Alert** lets companies send customers personalized instant messaging alerts. The applications run over public instant messaging networks, including AOL's network. Pricing starts at \$500 a month and is based on the features used and the amount of usage; the applications can also be deployed onsite. To learn more, visit www.facetime.net or call 650 574-1600.

A Clean Slate

Donating your company's aging PCs to charity? Selling them to the highest bidder? The last thing you want to do is pass along reams of corporate secrets and private e-mails. **OnTrack Data International** offers **DataEraser**, software that scrubs PCs' hard drives clean by repeatedly overwriting the data. **DataEraser Professional Version**, which can overwrite SCSI drives, is priced at \$199.95; site licensing is available for corporate IT departments. **DataEraser Personal Version** is priced at \$29.95. For more information, visit www.ontrack.com or call 800 872-2599.



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rent telecommunications provider. "It probably isn't a good idea to start from scratch with another vendor," he says. "When an operational problem occurs, you don't want competing vendors tossing the ball back and forth into each other's court."

In fact, interoperability gaps are a big problem for enterprises struggling to link existing e-mail, voice mail and fax systems

to unified messaging products and services. Standards for interoperability between messaging platforms have not yet been widely implemented, so options for interoperability with legacy messaging systems are typically primitive or nonexistent. While Trans-Form experienced only minor problems

implementing its system, the story was different for EDS. "We had a GTE technician that just about lived at our site for a month," says King. "We were the fifth CallPilot system that was installed, so it was a learning curve for everyone."

Migration barriers present yet another potential headache. When planning a unified messaging framework, organizations need to make sure that existing technologies—such as PBX, network and PC resources—are up to the job. "For example, if the PC is a dog, then you aren't going to be able to open your voice mail or faxes in a timely fashion," says King.

Still, it appears inevitable that unified messaging is destined to dramatically simplify business communication. Ovum's Walton compares the technology's arrival to the introduction of e-mail technology. "When e-mail took off, people realized that there was a whole array of things they could do that they couldn't do before. I expect unified messaging will go the same way."

John Edwards is a freelance technology writer based in Gilbert, Ariz. He can be reached at jedwards@john-edwards.com.

REVISIT videoconferencing

Who Needs Talking Heads?

Ten years later, videoconferencing is still a technology on the verge BY FRED HAPGOOD

FROM A DISTANCE, the logic of adding images to telephony seems as obvious as adding salt to soup. What could be a more natural enhancement of simple voice communications than adding facial expressions and body language? For generations the compelling simplicity of this idea has attracted ambitious engineers and visionary entrepreneurs eager to push this most obvious of inventions into the world.

Unfortunately their ingenuity and boldness has been shadowed by what is beginning to look like a curse in the spirit of Zeno's Paradox—no matter how close you get to your destination, you never

quite arrive. If this trend continues, the videophone (at least as a general upgrade of the telephone) may turn into the robot vacuum cleaner of the 21st century: perpetually on the doorstep but never quite over the threshold.

The first generation of efforts, carried out mostly by Bell Laboratory and Bellcore engineers in the '60s and '70s, foundered with the discovery that a useful presentation of nonverbal language requires significant amounts of bandwidth, quality hardware, uncluttered networks and very smart—almost AI-level—compression algorithms. In the '70s this

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level of technology was out of reach for the general market, and the videophone was left stuck in the lab.

In the 1980s, the looming promise of ISDN catalyzed a new approach to the problem. Since the high cost seemed to rule out the consumer market, vendors focused on a niche: business meetings, especially those requiring travel. Business travel is so expensive its accumulated cost could cover the purchase of even quite expensive technologies and still net a return, at least in theory.

This model seemed to make sense, and

off-camera, even if those reactions are quite important. Also, users have found it difficult to figure out who is looking directly at them and who is looking away. A "talking head" on a monitor, often set on a raised podium, acquires tacit authority out of proportion to his or her actual position in the corporate hierarchy. Changes in image proximity (zooming in or out) aren't connected to changes in voice volume, which can be disorienting.

Though these defects are subtle, they have made videoconferencing much less effective than hoped. While there seems

A "talking head" on a monitor, often set on a podium, acquires tacit authority out of proportion to his or her actual position in the corporate hierarchy.

videoconferencing, as it was called, emerged to general applause. *CIO* was certainly convinced: In 1990, we predicted confidently that "an environment for significant, sustained growth in this area is about to emerge, probably in 1992 to 1993." Nor were we alone. "I thought then that by now any business large enough to have a conference room would have a VC installation," remembers Paul Zielie, engineer and president of Visual Systems Integration Group, a consulting company.

But we all overlooked the curse. According to Professor Judy Olson, a researcher at the School of Information at the University of Michigan, face-to-face meetings establish and draw their meaning from a social context, and that context cannot be communicated by facial expressions and body language alone. Typically, VC cameras are fixed at a certain direction, and the zoom is set for a standard image proximity. Viewers cannot control the camera, which often means they miss the reactions of other meeting-goers sitting

to be no formal studies on this point, many believe videoconferencing installations do not lead to lower travel costs. (Some feel the technology has actually increased costs by stimulating even more interest in face-to-face meetings.)

The industry reacted to this second disappointment by targeting a less demanding application: adding value to distance communication as opposed to replacing face-to-face meetings. The high end of this sector, according to Norman Gaut, chairman, CEO and president of PictureTel, entails integrating all forms of media into a single online session: video, audio and data, real-time and archived, interactive and broadcast, with material fetched as needed from cameras, microphones, local databases, intranets and the internet. The low end, represented by web-based video, runs all the way down to 10-frames-per-minute webcams. The benefit that low-quality video brings to a call is limited but real (especially between people who do not know each other), and as the cost of these connections falls, even this technology will

new products

Testing, Testing

Putting an e-commerce site through its paces doesn't require asking friends and family to shop till the site drops. **Watchfire Macrobot 1.0** can automatically test e-commerce and web transactions. Play around on your site—say, try to order five T-shirts in size XL and send them to five different addresses—and Macrobot will record what you did. The software will turn your commands into a test script that can be played back later. Tweak the scripts by changing the variables in a spreadsheet-like data table. Macrobot 1.0 is priced at \$2,995 for a single-user license, \$12,995 for a five-user license and \$19,995 for a 10-user license. For more information, visit www.watchfire.com or call 613 599-3888.

Clicks Meet Bricks

One way to marry brick-and-mortar stores to the web is to bring the web to the brick-and-mortar stores. **Hypercom** has unveiled an internet-enabled point-of-sale (POS) information and e-commerce platform that aims to do just that. Called **ePic** (for e-POS-infocommerce), the platform consists of internet-enabled POS terminals and several server software packages that connect the terminals to the internet. Hypercom also offers a service to support the



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surely spread. (One business application that seems to be growing rapidly at the moment is distance training.)

In the meantime, research continues on the old dream. University of Michigan's Olson points out that just as body language is set in a network of social interactions, so are social interactions set in an office environment. One of the advantages of physical travel is sensing this environment—whether doors are open or closed, how people are dressed and so on. Olson is addressing this need by exploring

the integration of corporate lounges with "video walls." The idea is to cover a wall with thin screen monitors and put a camera in the middle and microphones and loudspeakers on each side. When these installations are connected the members of each company can see into the lounge and then down the corridors of each other's offices. (This might be called the "video water cooler.") So far the experiment looks intriguing, but Olson is cautious. She knows the curse could strike at any time. ■

PREDICTIONS

storage

Storage for Rent

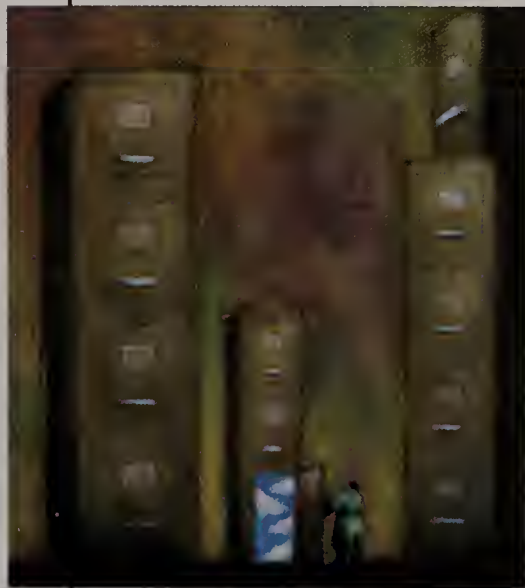
WHY BUY when you can rent? CIOs will find themselves facing this question from a new breed of outsourcers offering rentable storage. These companies, sometimes called storage utility providers or storage service providers (SSPs), let customers rent the storage capacity they need. Customers are billed every month or every quarter, "sort of like a phone bill," says Doug Chandler, a senior analyst at Framingham, Mass.-based IDC (a sister company to CIO Communications). Storage utility providers typically own the storage devices and maintain them on their premises; customers access their stored data via a network connection. In the traditional stor-

age outsourcing model customers buy the storage devices, house them onsite and hire outsourcers to manage them onsite or remotely. The new storage utility model's appeal lies in its flexibility and in the fact that companies don't need to make an up-front investment in storage devices.

IDC predicts that the storage utility model of outsourcing will grow sevenfold over the next few years, from roughly \$100 million in revenues in 1999 to about \$700 million in 2003. At first, the storage utility model will appeal most to dotcom companies that need to ramp up quickly, and also to cost-conscious small and midsize companies that don't want to buy or manage storage devices themselves. But don't

expect the services to be an immediate hit with the Fortune 500, Chandler says. Why? Because many CIOs at large companies, concerned about security and performance, feel uncomfortable handing over the storage reins to someone who will run it offsite. And as the storage market becomes more and more commoditized and prices drop, there will be less financial pressure for them to turn to outsourcing, Chandler says, much the same way the drop in PC prices has taken some of the momentum out of the desktop management outsourcing market.

—Sari Kalin



new products

ePic terminals for companies that do not want to buy, install or maintain the servers themselves.

The ePic terminals have the same secure credit card payment processing capability that one would find in a typical POS terminal. They also have web browsers loaded on them. The ePic terminals are designed for use by both retail employees and customers. An employee could use the terminals to process and fulfill orders from the store's website, to send e-mail or to electronically store and retrieve receipts, among other applications. The terminals can also show advertisements to customers (store owners get a cut of the ad revenue) and offer interactive electronic coupons or loyalty programs. The terminals cost between \$400 and \$800, depending on screen size and whether or not the terminal offers a color screen and sound capabilities. The server software packages range in price from \$50,000 to \$300,000, plus additional charges depending on the number of stores and terminals. For more information, visit www.hypercom.com or call 602 504-5000.

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UNDER DEVELOPMENT

quantum computing

A Quantum Leap for IT

A PHONE BOOK with randomly arranged entries doesn't sound very useful. But a powerful new algorithm could someday make such a database both commonplace and highly efficient. All that's needed is a quantum computer.

The algorithm, developed by Bell Labs researcher Lov Grover in his spare time, will be ready for use when the first quantum computer becomes available—maybe five or 50 years from now. Quantum computers work at atomic and subatomic levels to perform multiple computations side-by-side—a big leap forward from today's

step-by-step-oriented electrical computers. The systems exploit the fact that under certain conditions atoms and subatomic particles can exist in multiple realities. So, unlike a conventional computer—in which bits exist in a state of either zero or one—a quantum computer's "qubits" (quantum bits) can exist in two states simultaneously. This allows a quantum computer to search different parts of a database swiftly and simultaneously.

According to Grover, a conventional computer would need to plow through a substantial number of records—perhaps

a half-million or so—in order to retrieve a particular item in an unsorted one-million-record database. But a quantum computer using Grover's algorithm would only require a specific number of steps; the number of steps needed is the square root of the total number of items in the database. "For instance, in a million-item database, it takes only 1,000 steps to find the right record," says Grover.

The algorithm makes use of the counterintuitive and sometimes bizarre principles of quantum mechanics, such as the idea that something can exist in several states at the same time, depending on how or when you look at it. "Programming a quantum computer is particularly interesting, since there are multiple things happening in the same hardware simultaneously," says Grover. "One needs to think like both a theoretical physicist and a computer scientist."

Grover notes that the technology could also be used in other areas besides phone books and business databases. Of special interest are internet search engines, which, by their nature, need to quickly find large amounts of random information. "A quantum computer would have a clear advantage over a classical computer" in a search engine application, he says.

While the first quantum computer won't become commercially available for many years—perhaps decades—Grover says his algorithm has already been honed to perfection. "It is probably the simplest quantum algorithm," he notes. "Therefore, the algorithm will always be of great importance, and whenever quantum computers arrive—10 years from now or 200 years from now—it will provide an application."

—John Edwards

The algorithm makes use of the counterintuitive and sometimes bizarre principles of quantum mechanics, such as the idea that something can exist in several states at the same time.

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Opinion

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CIO Confidential

Only The Names Have Been Changed

On Partners, Customers and George Orwell

BY ANONYMOUS

ON THE BOOKSHELF in my office is a copy of *The Winston Dictionary, Advanced Edition*, printed in Chicago in 1946. I found it in a box in the closet 10 or 15 years ago, and my original reason for keeping it was purely sentimental. It was my mother's, given to her as a high school graduation gift to assist her in her studies at New York State College for Teachers at Buffalo—the 1946 equivalent of sending a kid off to university with a \$3,000 laptop.

It's a wonderful, elegant book full of little illustrations, badly out-of-date maps, forgotten words and familiar words with unfamiliar definitions. Strangely, it's also wonderful and reassuring for all the words and definitions it doesn't contain, like



outsourcing, *download* and anything followed by *.com*. It's so quaint, in fact, it defines *partner* as a noun! Over the years, and in spite of the online availability of Mr. Gates' dictionary-thesaurus, I've come to depend on it almost exclusively as a defense against our brave new world of invented vocabulary and tortured phrases where, suddenly and from nowhere, nouns become verbs and verbs become nouns. We twist and torture our language so much in the pursuit of our agenda

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that it's sometimes difficult to decipher the real message.

Do you know what "is" is?

I got the most amusing letter from a salesman today, which is what started me thinking about this topic. I'll call this salesman Wylie (because that's his real name), a strikingly uncharismatic guy with a bad case of attention deficit disorder and enough irritating mannerisms to make coffee nervous. As background, I should tell you that we have a strategic sales alliance with Wylie's company—which is another way of saying we sell them a lot of stuff.

A few weeks ago, Wylie called to tell me that the president of his division wanted to come to town to meet me and discuss

Examples of tortured and distorted language are everywhere. One of the most damaging illustrations happened, as you'll recall, about 10 years ago when some of us, myself included, decided it would be a good idea to have our IT people call their coworkers and the users of our systems our *customers*. This, we thought, was a sure way to bring our programmers and design analysts down to earth and get them to concentrate on those things the users thought important.

The basis of this approach was the sound and well-proven Orwellian notion that if you can get people to speak in a certain way, you can get them to think in a certain way. This is what the politically correct movement is all about. It's words used

as weapons, as dogma, in an effort to retool our attitudes and prejudices. When the consultants on your ERP implementation ask for more money, the reason most often given is "creeping complexity," implying some fault on your part, instead of calling it "receding oversimplification," which would be their error.

Do not think of the writer as short, cranky and balding, think of me as vertically, attitudinally and follicly challenged.

Naturally, the "customer" plan worked perfectly, and the results have been an unmitigated disaster. The mystery is not why it was a disaster but why we didn't see this train wreck coming in the glare of the twisted logic we were promoting. That being: System users are our customers; customers are always right; hence, system users are always right.

Someday we'll look back on this, laugh nervously and change the subject.

Let's consider, for a moment, the magnitude of these nested absurdities. First nobody and nothing is *always* anything. A recent Gallup Poll revealed that 18 percent of Americans are under the impression that the sun revolves around the earth. Might we then assume that these 54 million people could occasionally be wrong about other, less obvious stuff?

The wants and needs of systems users—and their importance to the business—are in no way comparable to those of our business's real "green money" customers.

Dubbing the guy or gal in the next row of cubicles a customer had the effect of imbuing that person with all the status and influence (and attitude, I might add) of those people who were plunking down the hard cash that was keeping us in business. Almost overnight, IT people went from being those mysterious peers in the lab coats to being administrative subordinates, incapable of comprehending the needs of the business, and the universal cause of every other department's shortfall in performance.

Language is a powerful thing.

This "user as customer" thing also had an unexpected and

We now see that Wylie is not, as we mistakenly assumed, a salesman. He is, in fact, a broker in strategic relationships.

my department's decision not to standardize on his company's products. Wylie's proposal had far fewer features and was remarkably more expensive than the alternatives. Apparently, Wylie figured that I'd be so impressed by having the president of his company in my office that I'd reconsider and reverse our decision. To make a long meeting short, I offered to keep the peace by asking the review team to meet again with Wylie to make sure there were no misunderstandings in his proposal. As a result of that meeting, Wylie sent the letter I received today. Here's an excerpt:

"We appreciate your help in scheduling time for the review committee to reevaluate our offering. We met on Tuesday with the committee with the goal of developing a strategic relationship with your organization. We were very surprised to hear that your company did not feel there was an opportunity for us to collaborate over the next 18 months. It seems that there is a disconnect between the strategic relationship our companies have at an executive level and the relationship we have with your department. Do you have any thoughts?"

Now here's a helpful translation for those of you not initiated in "corpspeak":

"We met with your review team to try to convince them to change their minds and buy our stuff. They had the gall to say no. Our executives aren't going to like this. What are you going to do about it?"

Nice try, Wylie, but I get threatened like this at least 15 times a day.

We now see that Wylie is not, as we mistakenly assumed, a salesman. He is, in fact, a broker in strategic relationships.



- ⊕ 1 of 6 who started a \$520 million software company.
- ⊕ Oversees 12 teams of developers.
- ⊕ Remembers when programs were Version 1.0.
- ⊖ Network down for 4½ minutes while searching for technician.



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disastrous impact on the CIO role. A few years after we started using this terminology, it became fashionable among big companies to select CIOs based, believe it or not, on the magnitude of their ignorance of technology. The thinking was that progressive companies should not want or need a person with an IT background running IT. To get real results, they should

I have committed every day of the last five or so years to trying to reverse this terrible mistake and, in the process, trying to reestablish my department as a full contributing partner in the success of the business. It's been a long, hard road. To this day, and in spite of my best efforts, there are many users who insist on using the word *customer* when referring to themselves. In fact, I still hear it quite often from CIOs.

The fad disappeared suddenly when CEOs came to the shocking realization that their CIOs didn't know how any of their technology worked.

hire a "business" person whom they would then surround with technical people to get things implemented (a notion heartily endorsed by the consulting industry). The fad disappeared suddenly when CEOs around the country came to the shocking realization that their CIOs didn't know how any of their technology worked. (The kind of truly brilliant insight that got these men and women to the CEO position in the first place.)

In order to make meaningful progress in this regard, we must commit to characterizing things and ideas as they truly are, both inside and outside our companies—as painful as that might be at times. This will, over time, clarify our roles and enhance the contributions we work so hard to make.

Might I suggest we adopt *The Winston Dictionary*, 1946 edition, as our standard? Mom would

be so proud. **CIO**

Have you had a misadventure caused by the use and abuse of corporate euphemism? Share it with other readers at comment.cio.com. Anonymous has been a CIO at household-name companies in various industries for more than 12 years. He welcomes mail from customers and users alike at confidential@cio.com.

Coming in CIO

Look for these Articles in Future Issues of CIO

The Human Side of Enterprise Integration

Managing relationships with end users is critical to the success of any enterprise integration project. Learn what to look out for and ways to navigate the minefield of egos, special interests, uncertainty and suspicion that confronts CIOs in the ranks.

How to Survive in the Executive Boardroom

How do you perform when in the hot seat? We've been invited to eavesdrop on an executive board meeting at Hello Direct, a telephony company in San Jose, Calif. See how CIO Michael Young measures up when he presents his IT plan to the other officers during

the meeting. Also in attendance will be Michael Morris, who specializes in interpersonal relationships and will offer his opinion on Young's performance.

Special Report: Value

What is information technology worth to your organization and how do you measure its overall impact? This special package encompasses various features on value methodologies, case files on value proposition, an executive roundtable on how you define value, a selected list of must-have reads on the topic and much more.

ASP Outsourcing

Is the trend toward renting applications going to help overburdened CIOs meet

business demands for new applications, or will it cause them to lose their voice in the IT buying decision? Our in-depth report will provide the answer.

J.D. Edwards and the Colorado Center for IT Innovation

J.D. Edwards teamed up with the University of Colorado at Denver to implement a mission-critical IT cost allocation system. We'll examine this alternative approach to outsourcing, with a look at the big-picture potential and value of business-academic partnerships in IT.

CIOs on Board

Why would Peter Slovik, CIO and senior vice president at Cisco Systems, agree to serve on four different external boards of directors, a feat that would cause him to stretch his already-packed schedule to the limit?

Customer Appreciation Yields Stock Appreciation



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Do Linux and Critical Systems Mix?

CHUCK BEYER

CIO
NORTHWEST NATURAL
PORTLAND, ORE.

no

Of course not, unless you are running a large Unix environment with a plentiful supply of very competent Unix developers and administrators. Otherwise you would be adding credibility to the other definition of CIO: Career is over.

Unix is a good operating system, and the versions supported by Sun Microsystems, Hewlett-Packard and IBM are relatively safe. However, which Linux would you want to bet your career on? There are several versions with some sort of announced support, and who knows how many with "volunteer" support via the internet.

For the university, home hacker and large, well-established Unix shop, multiple versions of Linux and other Unix systems may be very acceptable. But most companies do not want to know or have to care about what operating system is running their applications. They certainly do not want to have to find and retain very expensive folks to install, maintain and enhance the OS. They want it to run out of the box without having to search the internet for a driver that actually works.

The most significant problem with Linux is not any technical weakness. The biggest problem is that it is *yet another* operating system to be supported by application vendors.

Linux cannot get much bigger without hurting the support structure that has helped it succeed. The people who now answer questions for free will want to be paid. I doubt Red Hat has applied for a nonprofit organization permit. And what if someone comes up with a killer-app modification for Linux? Will they really give it to the rest of the world for free, as required?

The companies that could succeed with Linux know who they are. If you are not sure, you would be wise to tinker with Linux on noncritical systems before taking the big risk. ■

yes

MICHAEL PRINCE

VICE PRESIDENT
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BURLINGTON COAT
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The benefits of Linux stem from its development model. Linux was created—and is continuously updated—by a community of the world's most skilled programmers. Linux is free not only in cost but also in the sense that it offers access to the source code. This presents businesses with the tremendous flexibility to shape their information technology structures without

relying on the whims of a vendor.

Moreover, because Linux is constantly improving, users don't have to wait several years for the next version. With proprietary operating systems, you could wait months for a bug patch if the vendor ever decided to release one. With Linux, updates and fixes are continually available, and you don't even need to bring your systems down to apply them.

Which raises another point. Linux is secure, reliable and easily upgradable, and its rate of improvement and growth of enterprise acceptance (which dwarf all other operating systems) show no sign of slowing. A recent IDC poll found that just under 25 percent of businesses were already using Linux in some capacity in 1999, and according to U.K. networking consultancy Netcraft, more public web servers run on Linux than on any other OS. Even the National Security Agency has recently joined the Linux party—you don't get any more mission-critical than that!

Of course, these benefits would ring hollow in the business world without the credible support and services Linux offers. Established players such as Red Hat and Caldera Systems sell packaged versions of the operating system, and hardware vendors such as Dell Computer sell preconfigured Linux systems. Red Hat, among others, has a well-developed support center, respected training programs, and an ever-growing and flexible array of service options. And the most respected software and hardware companies in the world, citing massive customer demand, now support Linux—many doing so well before it was a household word. ■

Which side of the debate are you on? Visit comment.cio.com and make your thoughts known. Send column ideas to faceoff@cio.com.

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Opinion Re:

The High Price of Internet Help
Picking up the Pace

Overpaid at the Top

BY DANIEL GROSS

SEVERAL YEARS AFTER the web first captured the imagination of the business press, big-time executives are now rushing headlong into cyberspace.

Late in 1999, George Shaheen left his perch as CEO of Andersen Consulting for startup Webvan Group, based in Foster City, Calif. Soon after, Richard Nanula, the former president and COO at Starwood Hotels and Resorts Worldwide, signed on with BroadBand Sports, a Los Angeles-based company that runs websites like Athlete Direct. And Kirkland, Wash.-based HomeGrocer.com hired Mary Alice Taylor, a former executive at Citicorp and Federal Express, as its chairman and CEO.

Internet companies, lacking profits, impressive revenues and anything resembling a long-term, steadfast business plan, need seasoned executives to reassure Wall Street analysts and institutional shareholders that their enterprises are viable.

And why are accomplished managers exchanging cushy corporate suites for Spartan startup digs? The answer is simple: money. Joining internet companies offers these mere millionaires the ability to become multimillionaires in a matter of months if the initial public offerings take off.



But I believe the sudden awakening of middle-age executives to the glories of URLs and cookies may be a sign of something other than the medium's maturation.

Over the years, CEOs at big companies have figured out myriad ways of wringing compensation from their companies: cars, interest-free loans, lucrative pensions and golden parachutes. Now they're bringing that ethic to bare-bones startups.

In October 1998, when TheStreet.com—then still privately held—hired Kevin English from Lexis-Nexis as its CEO, he commanded a hefty premium to the wages earned by the online magazine's editors: a \$350,000 base salary, a bonus of up to \$100,000, the use of a one-bedroom corporate apartment and a parking space. In all, English would cost TheStreet.com nearly \$500,000 per year, a sum equal to one-eighth of the company's 1999 third-quarter revenues.

The investment proved a poor one. English shepherded the

ILLUSTRATION BY LEE WALL

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BROADVISION
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Julie Wainwright
CEO, Pets.com

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company public in May 1999. But the stock soon slumped below the IPO price. And last November, having lost the confidence of TheStreet.com's board, English was out on the street.

At 55, George Shaheen likewise has higher maintenance costs than his twentysomething counterparts. His base salary at Webvan is \$500,000, with a target bonus of \$250,000. Just for signing, Shaheen was given 1.25 million shares of stock and options to buy 15 million over the next four years at \$8 per share. (Webvan went public at \$15.) Webvan also loaned Shaheen \$6.7 million at the bargain-basement rate of 6.2 percent. This from a company whose virtual registers racked up sales of only \$395,000 in the first half of 1999!

Let's compare these goody-bags with the salaries taken home by two web pioneers who run companies with comparatively long operating histories and significant revenues. In 1998, Jeff

Bezos of Amazon.com received a salary of \$81,840. No bonus. Yahoo Chairman and CEO Tim Koogle got a raise in 1999, to \$290,000 from \$195,000 in 1998.

It should come as no surprise that veteran offline executives parachuting into online posts demand pay that is off the established charts. But the trend toward hefty guaranteed salaries may have a significant fallout. Internet companies are already saddled with the twin burdens of low margins and exploding marketing costs. Now they're taking on the recurring expense of high-priced managerial talent. After investing large fixed sums into human resources that are unproved in this new medium, internet companies may find the goal of profits to be ever more elusive. **CIO**

Daniel Gross is a freelance writer based in New York City.

Be Nimble

BY CRAIG K. DILLON

CIOs NEED TO understand how much they are under the gun. Most CIOs recognize that the implications of ongoing technological developments are huge, yet at the same time they know assessing such developments is difficult. Developments are fast occurring in two areas: technological, such as client/server, object orientation and the internet; and business, such as supply chain management, customer relationship management and flow manufacturing. The changes in these areas interact to stimulate further change. Not surprising, the task of successfully integrating these changes and technologies is not appreciated by others within the company as much as it should be.

On top of all this, the external environment of the enterprise is becoming much more dynamic. The increased pace of change in the business world is creating a feedback mechanism to the CIO. The very actions that a CIO and an enterprise take to enhance supply chain operations, customer relationship management or e-commerce efforts create market pressures on competitors that in turn respond. These responses feed back to the CIO, creating need for additional changes.

Unfortunately, the traditional methods IT uses to change the supporting information infrastructure are just too cumbersome. IT designs and manages systems under the assumption that they are to be permanent. Hence systems are not designed with ease of change in mind.

When an IT department has a backlog of change requests measured in years, it's a foregone conclusion that the IT function isn't keeping pace with the rate of change in the business environment. When this is the case, the IT department is a drag on corporate strategy.

Therein lies the danger. Gone are the days when enterprises in an industry could feel safe knowing that whatever constraints they have, their competitors also have.

The enterprise that builds a flexible information infrastructure—one that is designed and managed to enhance maintainability with a knowledge of how IT systems interact with and affect business processes and goals—has the means to develop a significant competitive advantage.

History is filled with the corpses of once mighty companies that just could not keep up with change: U.S. Steel, Packard Bell and RCA are emblematic of companies that once dominated their industries yet ultimately failed to compete effectively. They had size and money but not flexibility.

Thus, the CIO has a choice. The CIO can wait until called on by the board to report why a corporate strategy has to wait on IT, while a competitor reaps the profits. Or the CIO can go on the offensive.

A CIO who opts to be aggressive should direct the building of a flexible information infrastructure that has the ability to change faster than the company or its environment.

By enabling enterprise flexibility, the CIO will ensure that the corporation thrives in the new millennium. Thus, IT becomes a key element of achieving corporate strategy. **CIO**

Craig K. Dillon is vice president of flexible enterprise solutions at S3 Consulting, a Naperville, Ill.-based consultancy.



It's time to start thinking out of the box
when it comes to business to business.

Opinion | Sound Off

Taking Sides on Critical Issues

Where Would You Be Without Microsoft?

BY MARTHA HELLER

SOME PUNDITS have speculated that Bill Gates' abdication of the Microsoft throne to Steve Ballmer was a belated effort to distance himself from the painful consequences of the Department of Justice settlement. Others disagree. As with all things Microsoft, public opinion is divided.

In a Sound Off column that asked, "Should Judge Jackson let Microsoft off the hook?" about half of 100 readers who responded argued that only the market should sit in judgment of a company operating in a free market economy. One respondent said, "Let Microsoft alone and allow free enterprise to run its course." The other half argued that Microsoft, guilty of abuses against businesses, consumers and the legal system, should be split into several companies or in some other way prevented from continuing its reign of terror. "Microsoft's antitrust practices have been bad for business," argued a reader.

Bad for business? We are in the midst of what is perhaps the most prosperous era in U.S. history, and we are complaining about Microsoft's damaging impact on business? Isn't it possible that the practices that allowed Microsoft to assume its monopolistic position were actually good for business, even



on the national level?

Would a world without Microsoft be as prosperous as the one we currently enjoy? If Bill Gates played fair, would we be riding the wave of the e-revolution and watching our national, corporate and individual wealth increase? As we anticipate the next wave of IT innovation and speculate as to how Microsoft will fare in a brave new world where AOL-Time Warner, Linux and a potentially debilitating legal settlement may knock Microsoft off its throne, let's ponder the question: Where would you be without Microsoft?

This thread began on Jan. 12, 2000, and, as is the case with most Microsoft matters, respondents were extremely passionate on both sides of the issue. Here is a sampling of the responses that Web Writer Martha Heller received. You can respond to her by e-mail at mheller@cio.com or via the web at comment.cio.com.

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I AM SO TIRED OF THE TALK ABOUT MICROSOFT. BIG DEAL if it has 80 percent of the market share. The reason it controls so much of the market is because no other company can come out with a more reliable product. What other software products can you trust? Lotus? Give me a break.

If people want Microsoft to give up its control over the market, I suggest that some of these computer brains get off their rumps and develop a product worth purchasing.

Until then, I say leave Microsoft alone. Where would business be without Microsoft's software? A few steps behind where we are now, I guarantee that.

Shane Lehnst

Information Analyst

EDS

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I HAVE BEEN IN THE COMPUTER FIELD FOR 39 YEARS. Remember Snow White and the Seven Dwarfs? If you acquired vendor A's computer, you were locked in to their proprietary hardware, software and code compilers. It was not uncommon to pay \$15,000 for an operating system and \$10,000 for

What's your take on Microsoft?

Want to sound off on this or other topics? Join the ongoing debates at comment.cio.com.

a compiler, after which you were restricted to their platform only. Stop and look at the market today and reflect how it would be to buy a Compaq computer and be committed to it for the rest of the system life. No way! Windows set a platform standard that is a blessing for the business community and a ban for Sun, Apple and the like. Each had a shot at the compatibility business, and each flopped.

Standards now, standards forever. Start mixing Windows, Unix, Apple and Linux in a company and you have a prescription for chaos. I say, No thanks. I prefer a stable and competitive platform.

Dannis L. Robinson

IS Manager

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IT SEEMS A GREAT MANY PEOPLE HATE MICROSOFT, BUT one must ask oneself why. The bottom line is plain old jealousy. Isn't there someone out there smart enough to create a better operating system? With the internet, isn't there a distribution

system that can avoid the channels Microsoft dominates? A lot of people mention Linux as a savior. Well, remember where Linux came from—it's one of the "many millions" of Unix derivatives! Without the Microsoft thread do you think there would have been such a cohesive front to keep Linux static?

America used to be a country where success was rewarded, not torn apart by a bunch of politicians who are being led by the string their contributors have attached to their nose! For good or bad, Microsoft has actually created competition through the hatred that has developed against it.

John Sestak

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I'M AN ADVOCATE OF FREE MARKET DYNAMICS. LET THE best product at the best price win. There is no better way to protect free market efficiencies.

However, there are two threats to a free market: one, inappropriate, inept governmental intervention; and two, abusive private monopolies. Only the former is ever discussed.

But before reaching a judgment in this instance, I'd like everyone to consider the possibility that the Department of Justice has actually acted as the free market champion, not Microsoft—a company that has repeatedly demonstrated its willingness to undermine the free market's ability to make decisions on price and performance considerations alone.

Louis A. Palena

President

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ALTHOUGH THERE ARE DAYS THAT THE MS OS SIMPLY PROVokes my anger (unexplained crashes, memory leaks and so on), I will most emphatically admit that the whole Microsoft phenomenon has carried IS a long way in the past 20 years. By making Windows a commodity product, computing power has been brought to even the most neophyte user.

As a website developer and administrator, I may be able to do all aspects of my job without a single Microsoft product (I develop on Unix and Linux servers). However, I am certainly not so naive as to believe that I would even have a job like this if it were not for the user-side advances that put the PCs in the hands of the consumers.

So, yes, I have a love-hate relationship with Microsoft. But sometimes those relationships are the most passionate ones.

Debra McCusker

Chief Analyst

Needak

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Opinion | From the Publisher

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D-to-C End Games



Gary J. Beach

WE ALL KNOW ABOUT the business-to-consumer model made famous by Amazon.com in which new companies—literally legions of dotcoms—raise capital with one intended purpose: to eat the market shares of Goliath companies (a.k.a. the Fortune 1000).

Then along came the business-to-business (b-to-b) model, which is in large part the reaction of big, often profitable, companies to E themselves into relevancy by making their internal business processes and those of their partners and suppliers more efficient. Billions of dollars are being invested in this phase of the new economy buildout. And billions of dollars are being squeezed out of bottom lines around the world.

That's good, right? More efficient businesses produce goods and services that customers want in a more timely fashion.

Efficiency is nice, but I am convinced there is more going on. And the key question that needs to be asked is, What is the end product of your b-to-b strategy? If it is only to improve efficiency, or prove to the world that you get the e-revolution, you will be out of business or acquired by 2005.

Last month I had the opportunity, as I do every spring, to moderate a series of lectures that *CIO* sponsors at New York University's Stern School of Business Management. One of this year's speakers showed me the future when he told the audience the end game of b-to-b is d-to-c.

What's d-to-c? It has the potential to shake the digital global economy to its roots—roots that got their start when Adam

Smith's book, *Wealth of Nations*, made popular the notion of placing an army of intermediaries between the seller of a good or service and its buyer.

D-to-c stands for "direct to consumer." Think of it as the revenge of the Fortune 1000. For radically thinking CIOs, d-to-c is the end game of b-to-b. It could precipitate an economic headache as large, global, e-energized corporations begin to squeeze intermediary companies—and their employees—out of their business processes.

D-to-c could (and some would argue is intended to) put a major hurt on the dotcom companies that entered the economic food chain prior to the b-to-b revolution. Just as b-to-b companies reacted to the business-to-consumer phase, dotcoms will have to think hard about what their value contribution will be in the d-to-c era. Millions of workers could be displaced or find themselves out of work.

Think I'm crazy? *The Boston Globe* recently ran this headline in its business section: "Stop & Shop [a large supermarket chain] to launch its own delivery service and is expected to end its partnership with Peapod [a dotcom delivery service]." Some would argue Peapod's value proposition is a delivery service, and if all its food business evaporated, the company could migrate to delivering other goods.

I predict you will read more and more headlines like this one in the future as the d-to-c strategies of corporations become more evident. The shockwaves of the coming d-to-c era could shake the foundation of the new economy to its digital roots. What's the end game of your b-to-b strategy? Send it along to gbeach@cio.com.



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The following individual, though not a member of our advisory board, was especially generous with his time and insight in helping us shape and execute the articles in this issue. We thank him for his valuable contribution.

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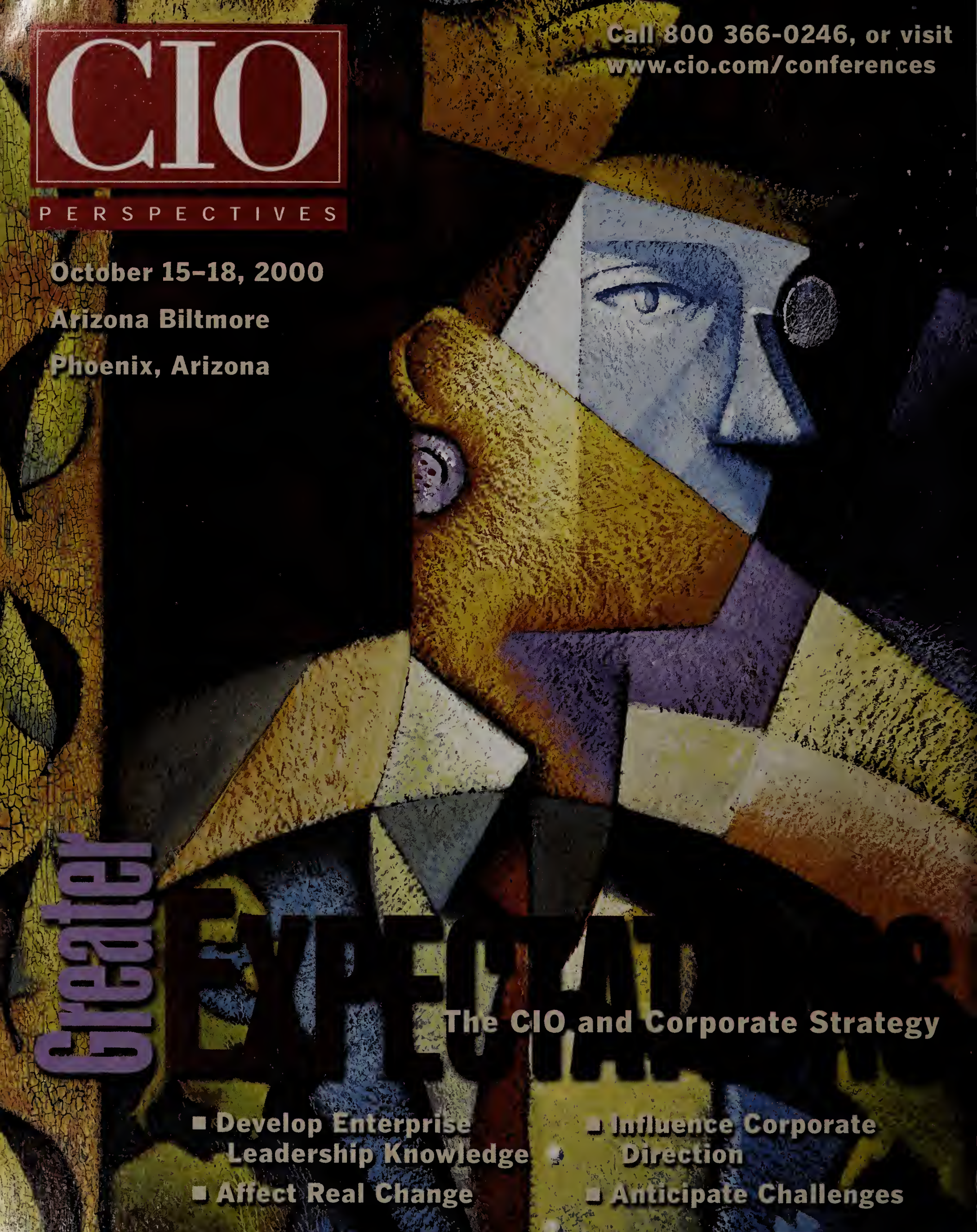
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Counting the Beads

THE FIRST COMPUTER? Let's go back in time. Looking out the window of the Wayback machine, we see a hand-held computer flying by, a PC, a hulking Cray, then Univac, Edvac and Eniac, followed by Charles Babbage's gorgeously named Difference Engine, and then, as the mists gather, Jacquard's 19th century punch-card loom, Pascal's 17th century adding machine and, finally, way, *way* back, the abacus.

The abacus is a form of counting board. The oldest surviving specimen is the 2,300-year-old Babylonian Salamis tablet, but the

modern abacus was born in 13th century China and is still being used by merchants all over Asia. Strictly speaking, it's a manual calculator that uses beads or disks. Even more strictly speaking, the abacus doesn't actually calculate, it enables calculation by remembering what's been counted.

In 1946, in a humbled Japan, the U.S. Army newspaper *Stars and Stripes* spon-

sored a race between an electric calculator and an abacus. If the point was to demonstrate the superiority of Western technology, it failed. The abacus won easily.

On the other hand, way back when, the man at the laundry where I picked up my father's shirts used an abacus to add up the bill and he was always, *always* wrong.

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